Bang&Olufsen

Beolink 1000

Beolink 1000
Type 1501, 1502

Beolink 5000
Type 1531, 1534

Beolink 5000
Type 1620, 1623

Master Control Link 2A
Type 2046

Master Control Link 2AV
Type 2020

Master Control Link 2AV
Type 202x, 203x, 204x

Master Control Link 2 Expander
Type 2007/2008

Transceiver
Type 2021

Master Control Link 2P
Type 174x

Converter AV9000 Audiokit
Type 1610

MASTER CONTROL LINK™

SERVICE MANUAL

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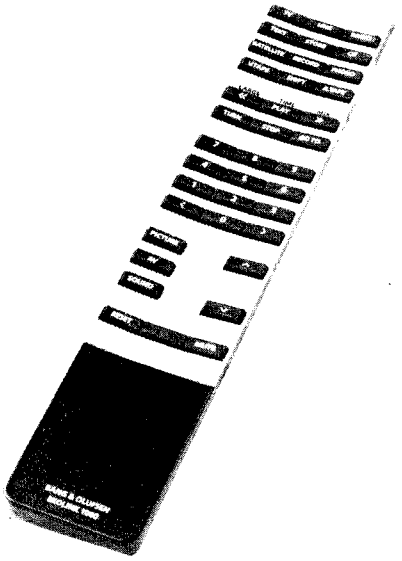
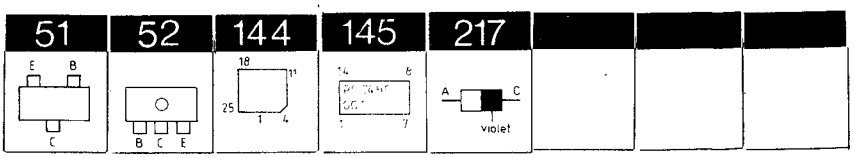
MCL-products not included in this Service Manual can be found in the Service Manual ACCESSORIES 1 part no. 3538599

BEOLINK 1000 TERMINAL



LIST OF ELECTRICAL PARTS



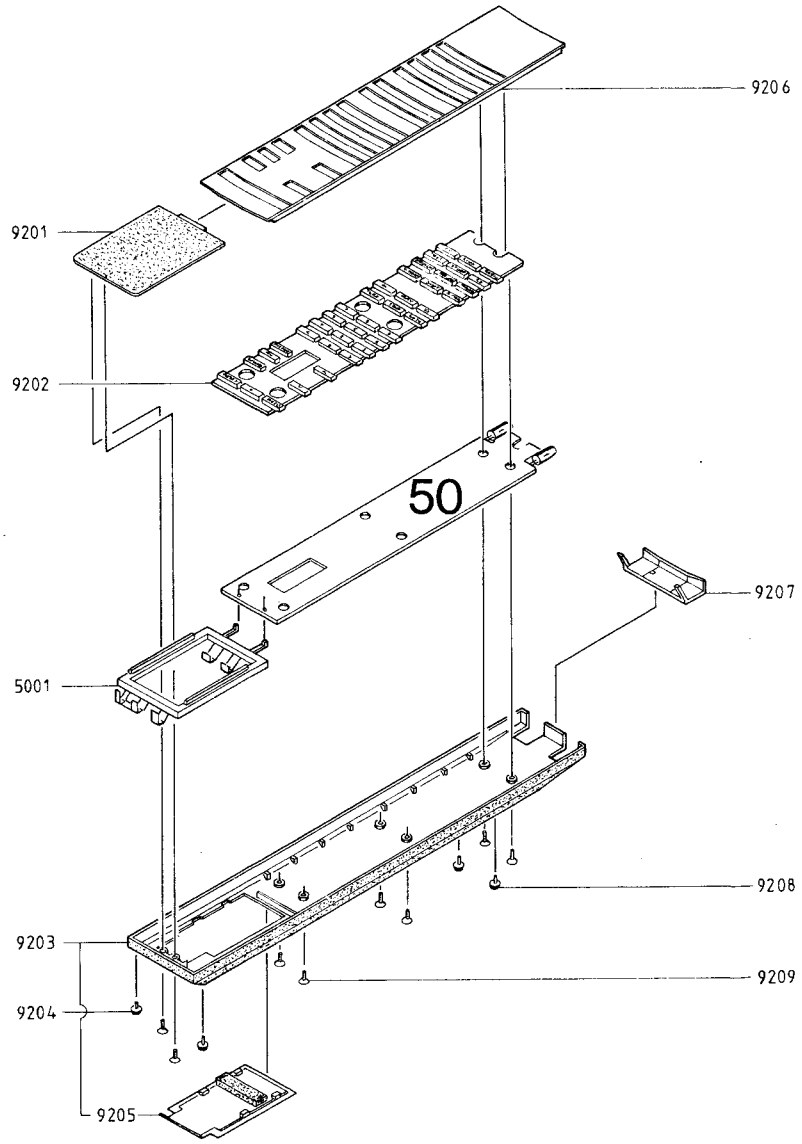
Resistors not referred to are standard see page 4-1.

△ indicates that static electricity may destroy the component
*Specially selected or adapted sample

PCB 50, 8007109
Remote Control

IC1*△	8341103	**144**	68 HC04 P3	IC2△	8340830	**145**	74 HC 393
TR1-TR3	8320615	**51**	BC 848B	TR5	8320684	**52**	BC869
				TR6	8320616	**51**	BC858B
TR4	8320616	**51**	BC 858B	TR7	8320684	**52**	BC869
D1-D6	8300482	**217**	LL4148/BAS32				
C1	4010166		100nF -20+80% 50V	C5	4000321		220pF 5% 50V
C3	4000239		33pF 5% 50V	C7	4010166		100nF -20+ 80% 50V
C4	4000278		27pF 5% 50V				

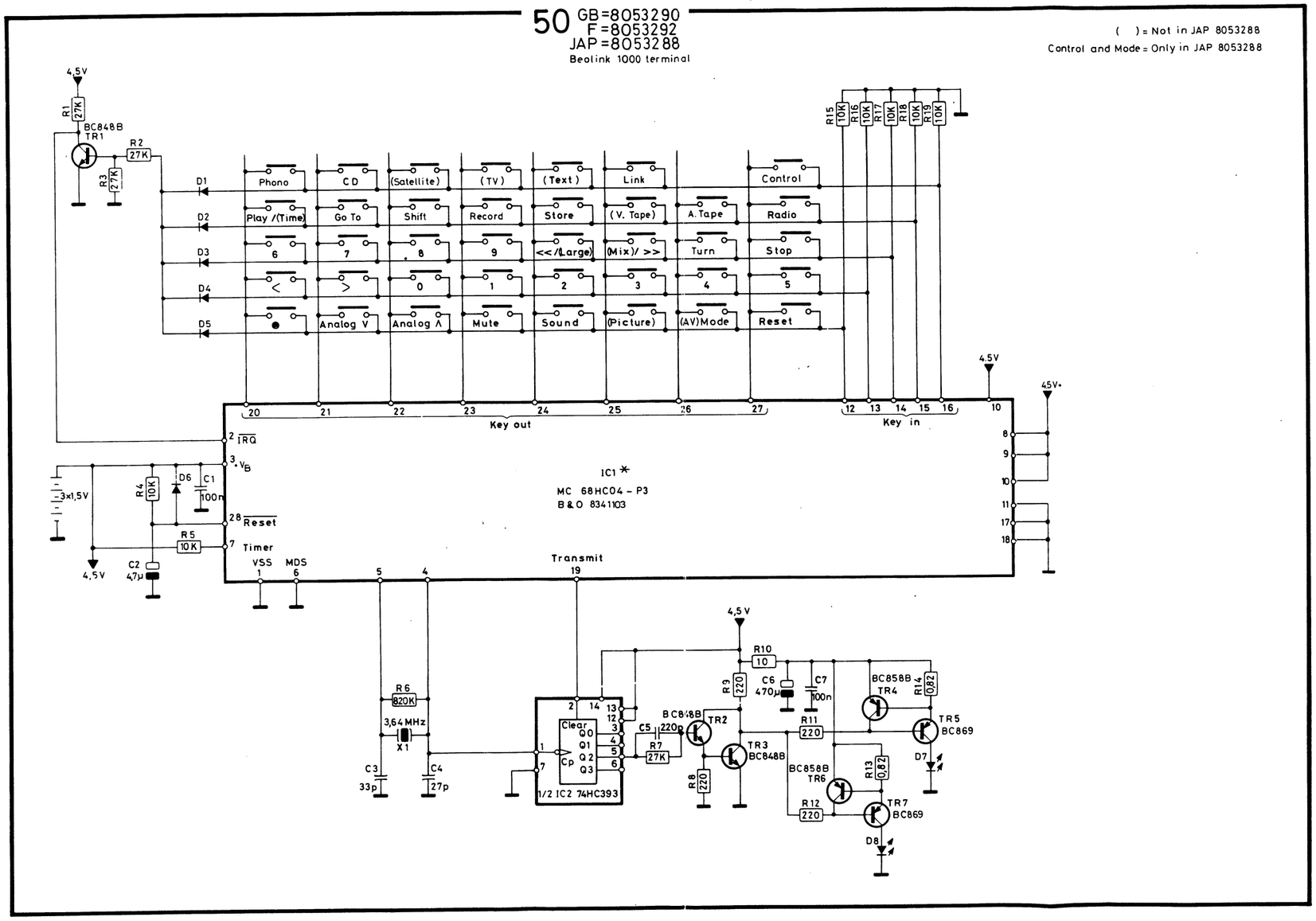
LIST OF MECHANICAL PARTS



50Modul	8007109	PCB Remote Control
5001	3015152	Guide for Battery

9201	3164688	Battery cover	9205	3164552	Battery cover
9202	2776086	Set of buttons type 3013/3014	9206	3131297	Top type 3013
				3131298	Top type 3014
	2776087	Set of buttons type 3015		3131299	Top type 3015
				3131322	Top type 3016
	2776124	Set of buttons type 3016	9207	3375047	Lens
9203	3131326	Bottom	9208	3103328	Foot
9204	3103274	Plastic foot	9209	2011057	Screw 2.2 x 5mm

DIAGRAM BEOLINK 1000 TERMINAL



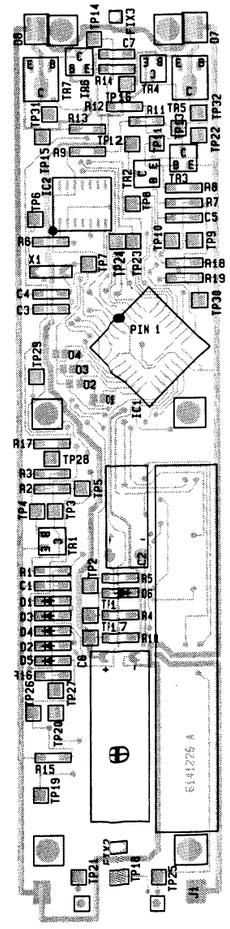
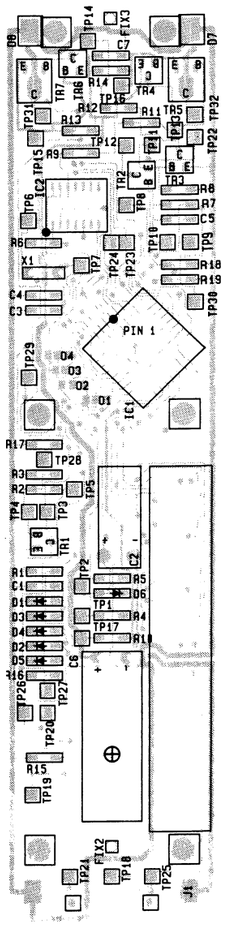


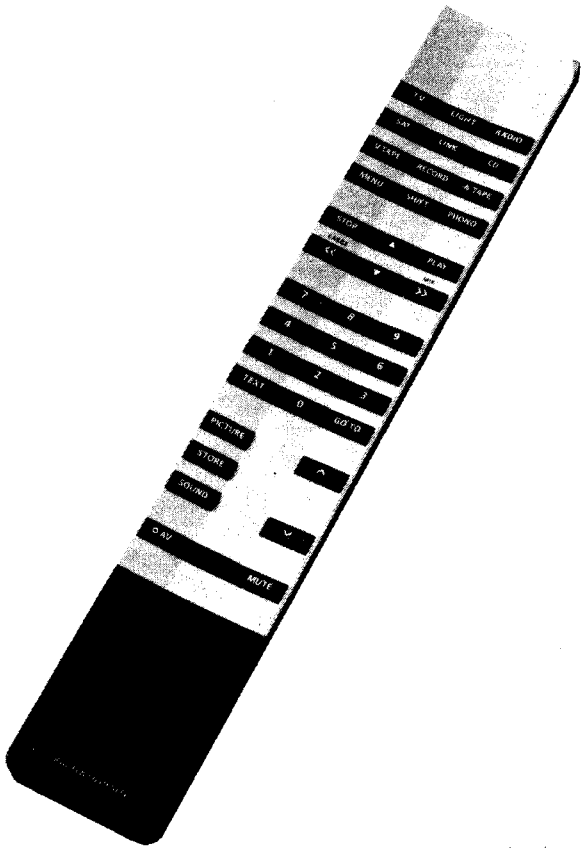
DIAGRAM BEOLINK 1000 TERMINAL



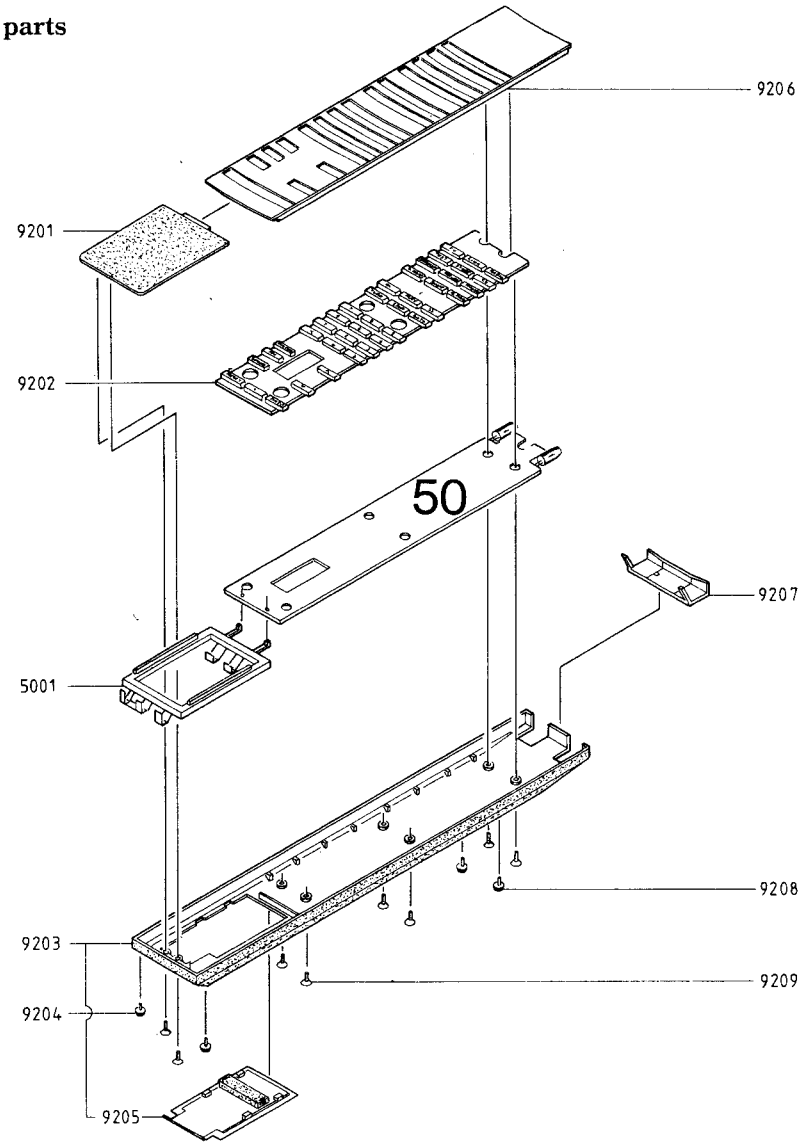
50 8053251
Beolink 1000 terminal USA

4,5V
R1 27K
BC848B TR1
R2 27K
R3 27K
D1
D2
D3
D4
D5
Phono
CD
ABC
TV
Menu
Link
Play
Go To
Shift
Record
Store
V. Tape
A. Tape
Radio
6
7
8
9
<<
>>
Turn
Stop
<
>
0
1
2
3
4
5
Analog V
Analog Λ
Mute
Sound
Picture
AV
Reset.
R15 10K
R16 10K
R17 10K
R18 10K
R19 10K
R20 10K
20 21 22 23 24 25 26 27
Key out
12 13 14 15 16
Key in
4,5V
4,5V+
10
8
9
10
11
17
18
2 IRQ
3 V_B
28 Reset
7 Timer
VSS 1
MDS 6
5
4
Transmit 19
IC1 *
MC 68HC04 - P3
B&O 8341103
3x1,5V
4,5V
R4 10K
D6
C1 100n
R5 10K
C2 4,7µ
R6 820K
3,64 MHz
X1
C3 33p
C4 27p
1/2 IC2 74HC393
Clear
Cp
Q0
Q1
Q2
Q3
C5 220p
R7 27K
R8 220
R9 220
R10 10
C6 470µ
C7 100n
R11 220
R12 220
R13 0,82
R14 0,82
BC858B TR4
BC858B TR6
BC848B TR2
TR3 BC848B
TR5 BC869
TR7 BC869
D7
D8

BEOLINK 1000, TYPE 1501, 1502



List of mechanical parts



50 Modul	8007730	PCB Remote Control
5001	3015152	Guide for battery
	7500253	Contact spring
9201	3164879	Battery cover
9202	2776259	Set of buttons
	2776289	Set of buttons, type 1502 (I)
9203	3131372	Bottom
9204	3103328	Plastic foot
9205	3164795	Battery cover
9206	3131368	Top
	3131353	Top, type 1502 (I)
9207	3375047	Lens
9208	3103328	Plastic foot
9209	2011057	Screw 2.2x5

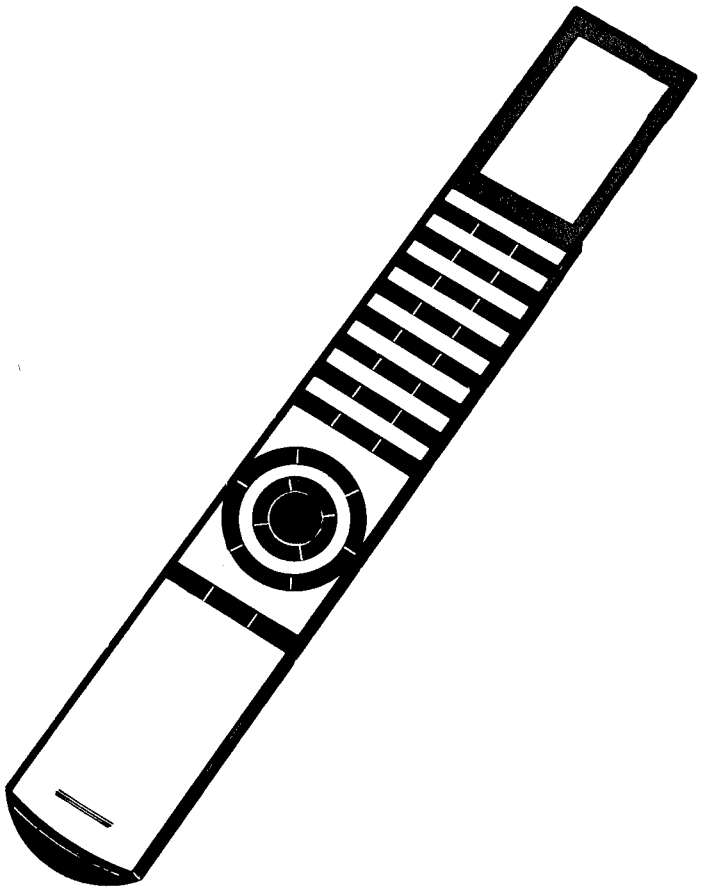
Parts not shown

8700017	Battery
3114373	Wall bracket
1150100	Beolink 1000, Complete
1150200	Beolink 1000, Complete (I)

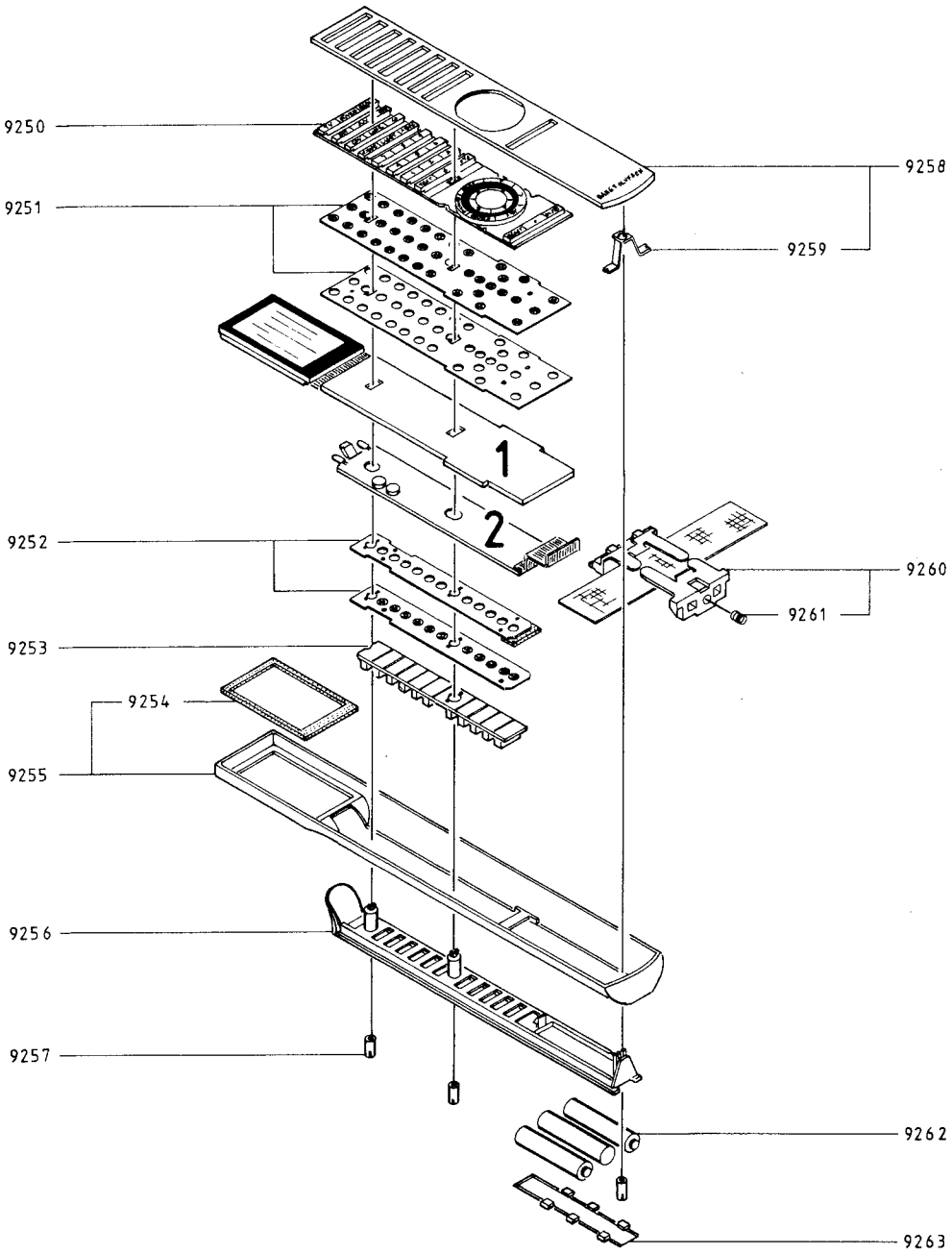
Owners manuals

3500156	Danish	3500162	French
3500157	Swedish	3500163	Italian
3500158	Finnish	3500164	Spanish
3500159	English	3500165	USA
3500160	German	3500166	Canada
3500161	Dutch		

BEOLINK 5000, TYPE 1531, 1534



BEOLINK 5000



BEOLINK 5000

List of mechanical parts

01Modul	8001331	PCB1, Microcomputer f/type 1531
	8001399	PCB1, Microcomputer f/type 1534
02Modul	8001332	PCB2, IR Modul
9250	2776249	Set of buttons w/ring
9251	7500263	Set of foil, primary
9252	7500264	Set of foil, secondary
9253	2776171	Set of buttons, secondary
9254	3947346	Tape f/display
9255	3454686	Bottom
9256	3454614	Holder f/set of buttons
9257	2934093	Threaded bushing
9258	3458789	Top plate
9259	2819267	Ground spring
9260	3152760	Holder f/battery
9261	2819275	Spring
9262	8700017	Battery
9263	3164791	Battery cover
	3392190	Set of packing

Owner's manuals

3501176	Danish
3501177	Swedish
3501178	Finnish
3501179	English
3501180	German
3501181	Dutch
3501182	French
3501183	Italian
3501184	Spanish
3501185	American
3501186	Canadian French
3501210	American sw 1.2

Parts not shown

3947531	IR-damper
3172099	Insulating piece f/battery
3375048	Surface kit incl. no. 9250-9253-9255-9256-9258-9263
1201000	Wall Bracket

REPARATION

Reparation af elektroniske fejl på Beolink 5000 er baseret på modulfejlsøgning og udskiftning af det defekte modul.

Terminalen kan programmeres til at fungere både som envejs- og tovejsterminal. Hvis batterierne fjernes fra terminalen, vil terminalen resette, og derved være sat op som tovejsterminal.

Serviceposition

Ved fejlsøgning og måling skal Beolink 5000 sættes i serviceposition. Det gøres ved at løfte microcomputer-modulet PCB 1, og vippe det hen over displayet.

REPAIR

The repair of electronic defects in the Beolink 5000 is based on module by module fault-finding and replacement of the defective module.

The terminal can be programmed for operating both as a one-way and a two-way terminal. If the batteries are removed from the terminal, it will be reset and thus be set up as a two-way terminal.

Service position

When carrying out fault-finding and measurements, the Beolink 5000 has to be placed in service position. This is achieved by lifting the microcomputer module, PCB 1, and tilting it up over the display.

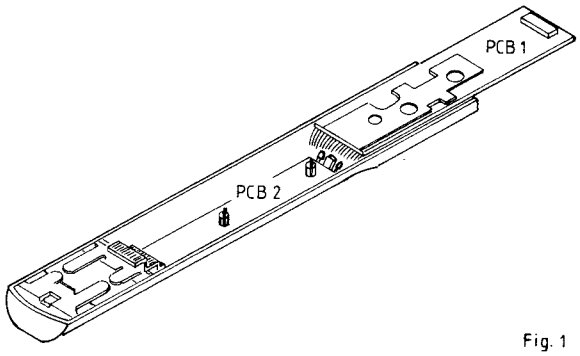


Fig. 1

Hvis der udskiftes moduler i terminalen, skal kontrasten i displayet kontrolleres, evt. justeres, se side 1-12.

If modules are replaced in the terminal, the display contrast has to be checked and perhaps adjusted, see page 1-12.

Reparationsguide

Hvis terminalen overhovedet ikke virker, gør da følgende:

1. Mål spænding fra batterier, den skal være over 3,5 V, hvis den er under, skal batterierne skiftes, ellers fortsættes med punkt 2.
2. Placer terminalen i serviceposition.
3. Mål spænding på stik P1, ben 2, der skal være Ubatt, (samme spænding som der kan måles på batterierne). Hvis der ikke er spænding der, skal forbindelsen fra batterierne checkes.
4. Kortslut ben 3 til ben 1 på stik P1.

   Mål med DC-voltmeter på stik P1, ben 15, 5 V ±10%. Mål med DC-voltmeter på stik P1, ben 18, -1,6 V ±20%. Hvis begge disse spændinger er i orden skal microcomputermodulet, PCB 1 skiftes, hvis ikke, skal IR-modulet, PCB 2 skiftes.

Repair guide

If the terminal does not operate at all, take the following steps:

1. Measure the voltage output by the batteries. It should be higher than 3.5 V. If the voltage is less than 3.5 V, the batteries have to be replaced. Otherwise, proceed to step 2.
2. Place the terminal in service position.
3. Measure the voltage at pin 2 of plug P1, which should be Ubatt (i.e. the same voltage as that measured on the batteries). If there is no voltage there, check the connection from the batteries.
4. Short pin 3 to pin 1 on plug P1.

   Measure by means of a DC voltmeter 5 V ±10% at pin 15 of plug P1. Measure by means of a DC voltmeter -1.6 V ±20% at pin 18 of plug P1. If both of these voltages are all right, the microcomputer module, PCB 1, has to be replaced; if they are not, the IR module, PCB 2, has to be replaced.

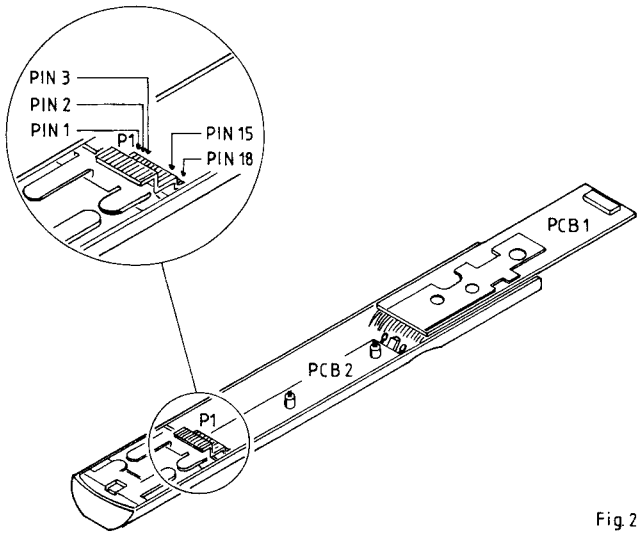


Fig. 2

Til test af IR-sender og IR-modtager skal der benyttes en tovejs audiomaster eller et tovejs TV.

Hvis terminalen sender IR-koder til audiomaster eller TV, men ikke viser noget i displayet, gør da følgende:

1. Placer terminalen i serviceposition.
2. Kortslut ben 3 til ben 1 på stik P1.

   Mål med DC-voltmeter på stik P1, ben 18, -1,6 V ±20%. Hvis denne spænding er i orden skal microcomputermodulet, PCB 1 skiftes, hvis ikke, skal IR-modulet skiftes.

Hvis terminalen ikke sender IR-koder til audiomaster eller TV, men displayet er i orden, skift da IR-modulet, PCB 2.

Hvis terminalen kan sende, men ikke modtage IR-koder fra audiomaster eller TV, og displayet er i orden, gør følgende:

1. Sæt terminalen op som tovejsterminal.
2. Hvis ikke terminalen virker nu, skift da IR-modulet, PCB 2.

A two-way audiomaster or a two-way TV is required for testing the IR transmitter and the IR receiver.

If the terminal transmits IR codes to the audiomaster or the TV and no messages are shown in the display, take the following steps:

1. Place the terminal in service position.
2. Short pin 3 to pin 1 on plug P1.

   Measure by means of a DC voltmeter -1.6 V ±20% at pin 18 of plug P1. If this voltage is all right, the microcomputer module, PCB 1, has to be replaced; if it is not, the IR module has to be replaced.

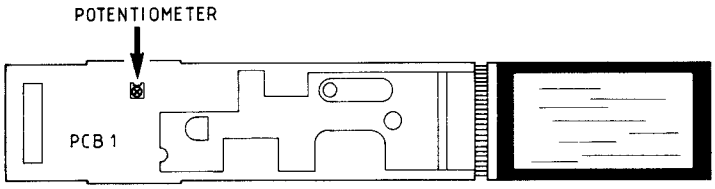
If the terminal does not transmit IR codes to the audiomaster or the TV and the display operates properly, replace the IR module, PCB 2.

If the terminal is able to transmit but not receive IR codes from the audiomaster or the TV and the display is operating properly, take the following steps:

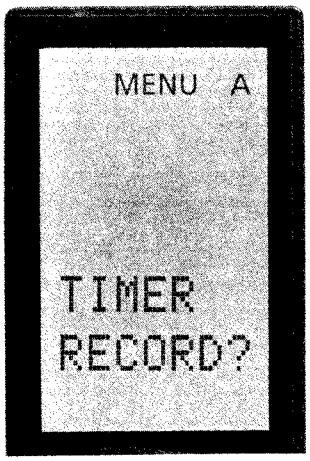
1. Set up the terminal as a two-way terminal.
2. If the terminal does not operate now, replace the IR module, PCB 2.

JUSTERING
Med det viste trimmepotentiometer kan kontrasten i displayet justeres.

ADJUSTMENT
The display contrast may be adjusted by means of the trimming potentiometer shown in the drawing.

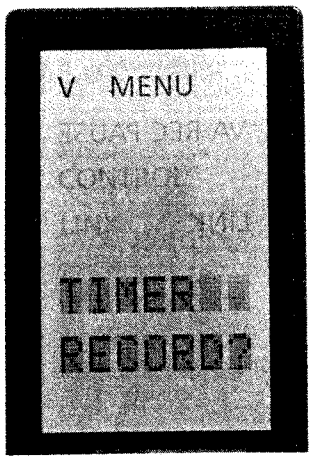


Korrekt kontrast



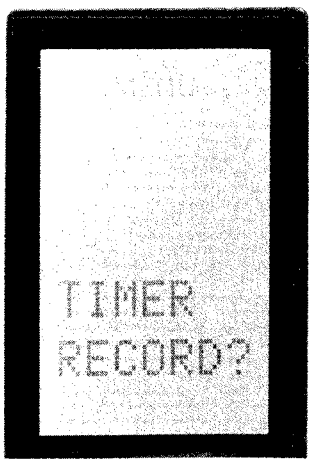
Proper contrast

For meget kontrast



Too much contrast

For lidt kontrast



Too little contrast

ADSKILLELSE

Afmontering af topplade

Tag batteridæksel af.

Skru de tre skruer A ud.

DISASSEMBLY

Dismounting the top plate

Remove the battery cover.

Unscrew the three screws A.

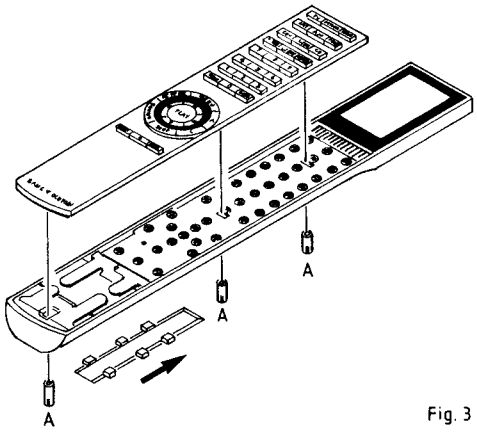


Fig. 3

Toppladen kan nu afmonteres.

The top plate may now be dismounted.

Udtagning af microcomputermodul, PCB 1

Microcomputermodulet, PCB 1 løftes lidt op, og med en skruetrækker frigøres fladkablet fra stikket.

Fladkablet kan nu skubbes bagud.

Pres displayet ud fra bagsiden af terminalen.

Removal of the microcomputer module, PCB 1

Lift up the microcomputer module, PCB 1, slightly, and release the flat cable from the plug by means of a screwdriver.

The flat cable may now be pushed backwards.

Press out the display from the rear side of the terminal.

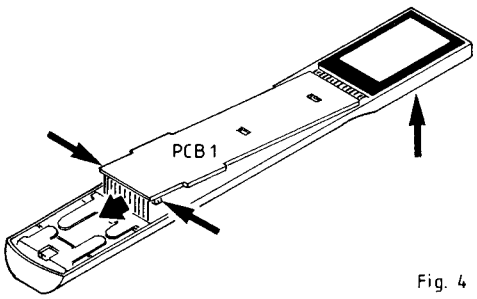


Fig. 4

Ved montering af et nyt microcomputermodul, husk da at tape displayet fast, en eventuel justering af kontrasten i displayet er lettest at foretage, før displayet tapes fast.

N.B. Microcomputermodulet og displayet må ikke bevæges til siderne, da man så risikerer at ødelægge forbindelserne til displayet.

When mounting a new microcomputer module, remember to lock the display into position with tape. If the display contrast has to be adjusted, this is most easily done before the display is taped.

NOTE. The microcomputer module and the display must not be moved laterally, since this would involve the risk of destroying the connections to the display.

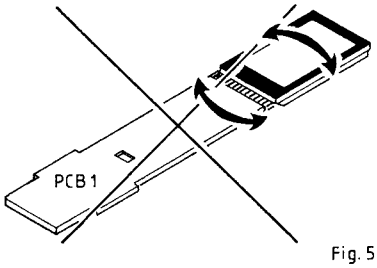


Fig. 5

Udtagning af IR-modul, PCB 2

Placer terminalen i serviceposition.

Lod batteriledningerne fra.

Pres de fire printholdere B ind.

Removal of the IR module, PCB 2

Place the terminal in service position.

Unsolder the battery leads.

Push in the four PCB holders, B.

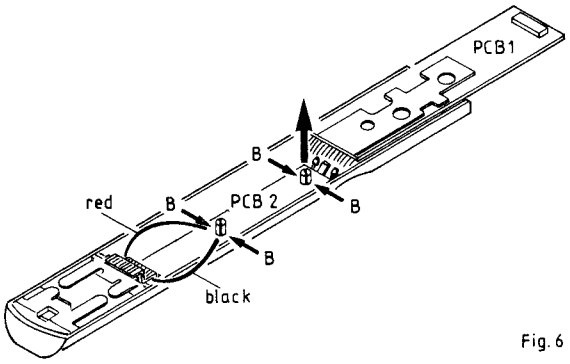


Fig. 6

Løft IR-modulet, PCB 2 op, IR-dioderne skal op først.

Lift up the IR module, PCB 2. The IR diodes must come up first.

OPSÆTNING

Kontrol af software version

Tryk [●] til display viser

STD.BY SYSTEM

Tryk [MENU] display viser

TRMINAL SETUP?

Tryk [▼] display viser

VER X.X

Tryk [STOP] for at afslutte.

SETUP

Software version check

Press [●] until the display shows

STD.BY SYSTEM

Press [MENU], and the display shows

TRMINAL SETUP?

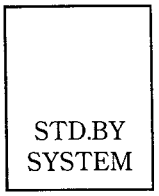
Press [▼], and the display shows

VER X.X

Press [STOP] to terminate check.

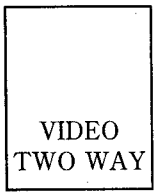
Opsætning af terminal til envejs/tovejsterminal

Tryk [●] til display viser



Tryk [MENU] display viser

Tryk [▶] display viser



Med [▼] og [▲] kan skiftes mellem TWO WAY og ONE WAY.

Tryk [PLAY] når den ønskede opsætning er valgt.

Display viser

(eller ONE WAY)

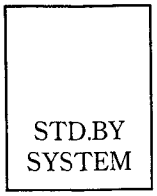
Med [▼] og [▲] kan skiftes mellem TWO WAY og ONE WAY.

Tryk [PLAY] når den ønskede opsætning er valgt.

Tryk [PLAY] igen for at acceptere (gemme) opsætningen.

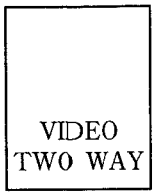
Setup of terminal as one-way/two-way terminal

Press [●] until the display shows



Press [MENU], and the display shows

Press [▶], and the display shows



It is possible to shift between TWO WAY and ONE WAY by pressing the keys [▼] and [▲].

Press [PLAY] when the required setup has been selected.

The display will show

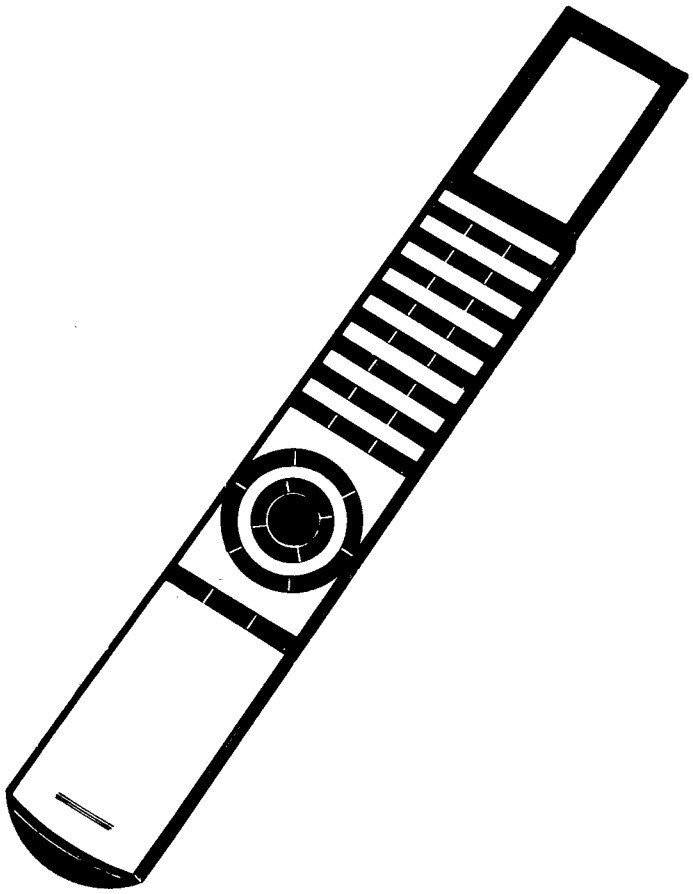
(or ONE WAY)

It is possible to shift between TWO WAY and ONE WAY by pressing the keys [▼] and [▲].

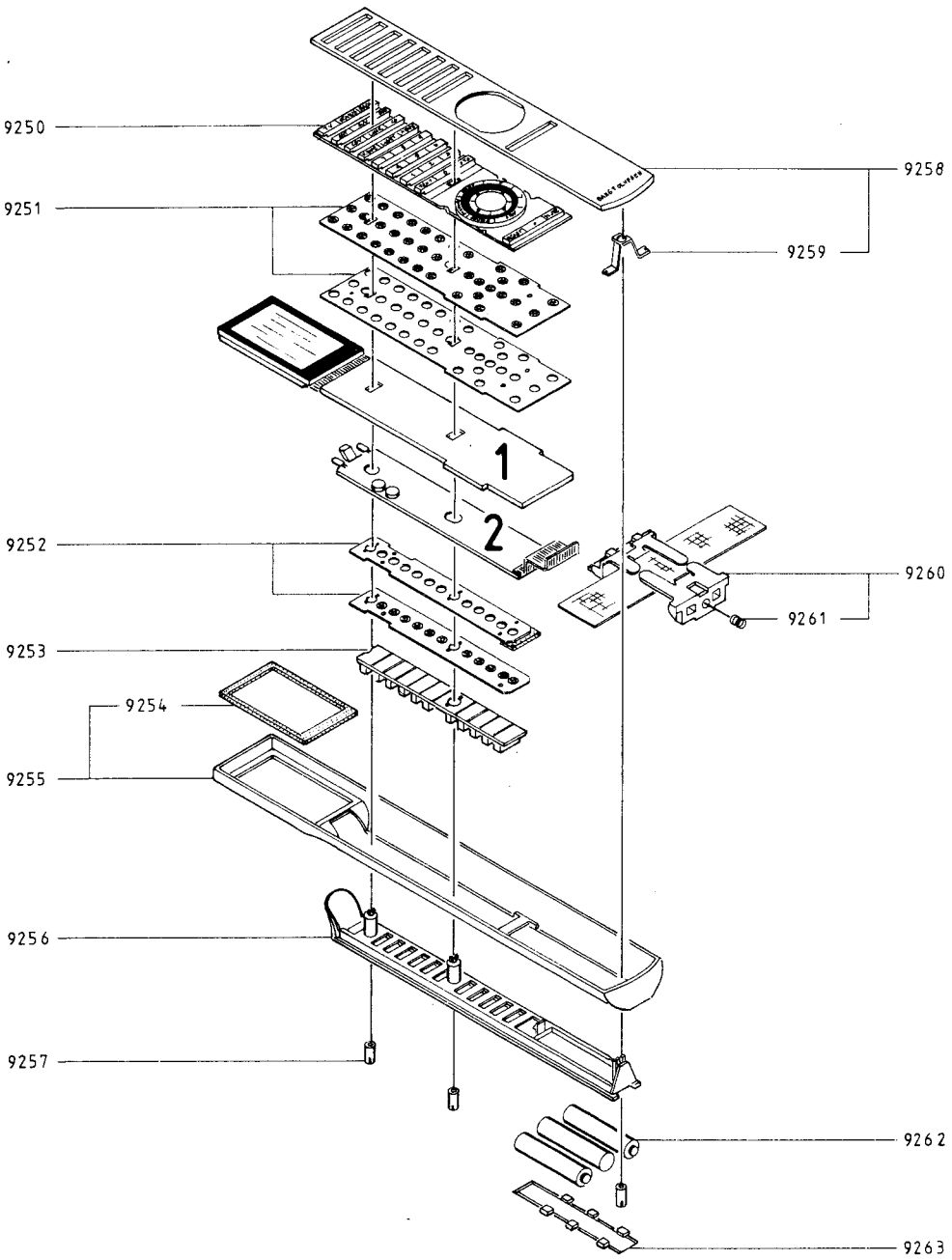
Press [PLAY] when the required setup has been selected.

Press [PLAY] again to accept (store) the setup

BEOLINK 5000, TYPE 1620, 1623



List of mechanical parts



List of mechanical parts

01Modul	8001578	PCB1, Microcomputer f/type 1620
	8001579	PCB1, Microcomputer f/type 1623
02Modul	8001332	PCB2, IR Modul
9250	2776303	Set of buttons w/ring
9251	7500263	Set of foil, primary
9252	7500264	Set of foil, secondary
9523	2776300	Set of buttons, secondary
9254	3947346	Tape f/display
9255	3454686	Bottom
9256	3454614	Holder f/set of buttons
9257	2934093	Threaded bushing
9258	3458789	Top plate
9259	2819267	Ground spring
9260	3152760	Holder f/battery
9261	2819264	Spring
9262	8700017	Battery
9263	3164791	Battery cover
	3392190	Set of packing

Owner's Manuals

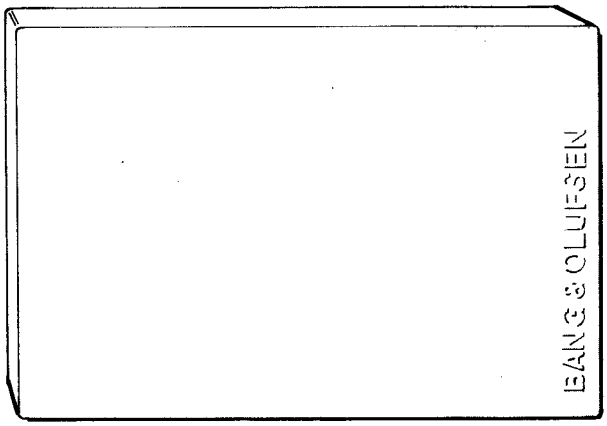
3501355	Danish
3501356	Swedish
3501357	Finnish
3501358	English
3501359	German
3501360	Dutch
3501361	French
3501362	Italian
3501363	Spanish
3501407	American
3501408	Canadian French

Parts not shown

3947531	IR-damper
3172099	Insulating piece f/battery
3375140	Surface kit incl. no. 9250-9253-9255-9256-9258-9263
1201000	Wall Bracket f/BL 5000

Repair, adjustment, disassembly and setup, see page 1-10 to 1-15.

MASTER CONTROL LINK 2A, TYPE 2046



PCB DRAWING

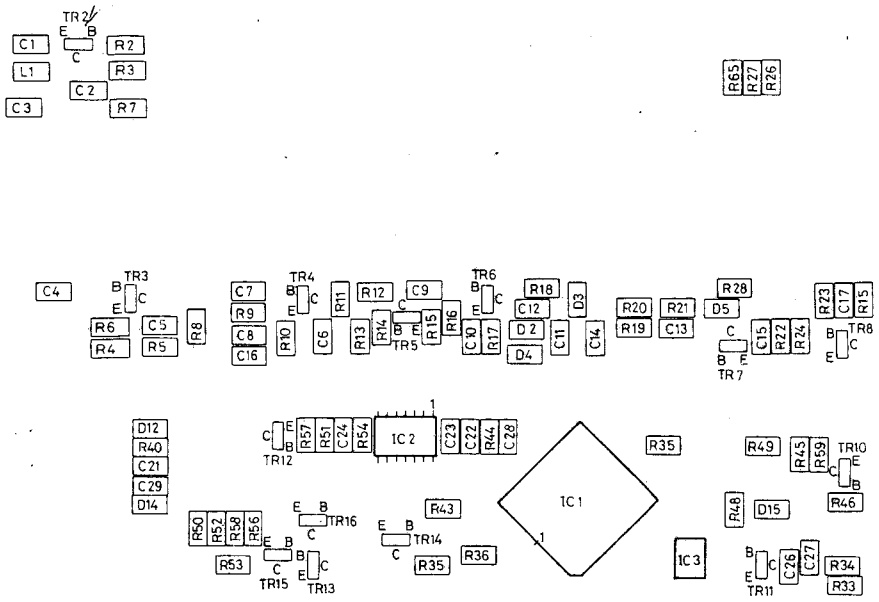
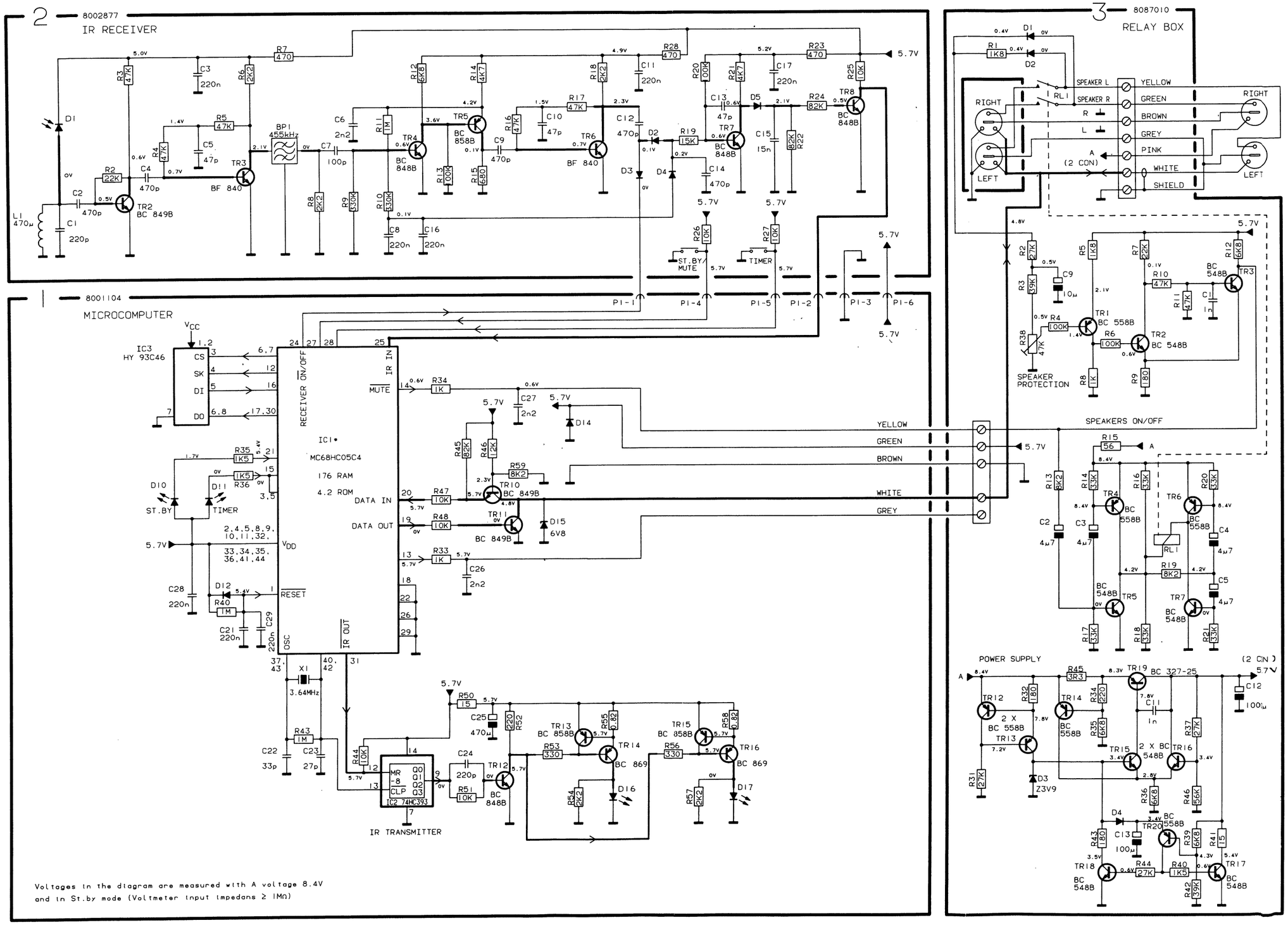
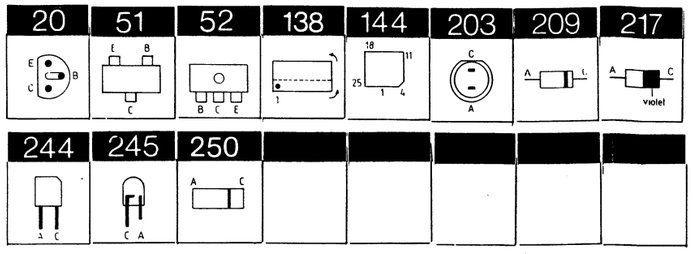

TR2
C1
L1
C3
C2
R2
R3
R7
R65
R27
R26
C4
TR3
R6
R4
C5
R5
R8
C7
R9
C8
C16
TR4
R10
C6
R11
R12
R13
C9
R14
TR5
R15
R16
TR6
C10
R17
R18
C12
D2
D4
D3
C11
C14
R20
R19
R21
C13
R28
D5
TR7
C15
R22
R24
R23
C17
R15
TR8
D12
R40
C21
C29
D14
TR12
R57
R51
C24
R54
IC2
C23
C22
R44
C28
R35
R49
R45
R59
TR10
R46
IC1
R48
D15
R50
R52
R58
R56
TR16
R43
TR14
R53
TR15
TR13
R35
R36
IC3
C26
C27
R34
R33
TR11

DIAGRAM MCL 2A, type 2046



Voltages in the diagram are measured with A voltage 8.4V and in St.by mode (Voltmeter input impedans ≥ 1MΩ)

LIST OF ELECTRICAL PARTS



Resistors not referred to are standard see page 4-1

△ indicates that static electricity may destroy the component
* Specially selected or adapted sample

PCB 01, 8001104
Microcomputer

IC1*△	8341155	**144**	MC68 HC05C4	IC3	8341016	**138**	HY93C46
IC2△	8340830	**138**	74 HC 393				

TR10-	8320636	**51**	BC 849B	TR14	8320684	**52**	BC 869
TR11				TR15	8320616	**51**	BC 858B
TR12	8320615	**51**	BC 848B	TR16	8320684	**52**	BC 869
TR13	8320616	**51**	BC 858B				

D10-	8330157	**245**	TLHR 4103	D15	8300584	**250**	BZV 55 C15
D11				D16-	8330140	**203**	TSHA 5502
D12	8300482	**217**	LL4148	D17			
D14	8300482	**217**	LL4148				

R55	5011281	0,82Ω 10% 1/4W		R58	5011281	0,82Ω 10% 1/4W	

C21	4000287	220nF -20+80% 25V	C26-	4010170	2,2nF 10% 50V
C22	4000239	33pF 5% 50V	C27		
C23	4000278	27pF 5% 50V	C28-	4000287	220nF -20+80% 25V
C24	4000321	220pF 5% 50V	C29		
C25	4200677	470µF -10+50% 6,3V			

X1	8030094	3,64MHz

PCB 02, 8002877
IR Receiver

TR2	8320636	**51**	BC 849B	TR6	8320740	**51**	BF 840
TR3	8320740	**51**	BF 840	TR7-	8320615	**51**	BC 848B
TR4	8320615	**51**	BC 848B	TR8			
TR5	8320616	**51**	BC 858B				

D1	8330145	**244**	BPW 82	D2-	8300482	**217**	LL4148
				D5			

C1	4000321	220pF 5% 50V	C10	4000293	47pF 5% 50V
C2	4000291	470pF 5% 50V	C11	4000287	220nF -20+80% 25V
C3	4000287	220nF -20+80% 25V	C12	4000291	470pF 5% 50V
C4	4000291	470pF 5% 50V	C13	4000293	47pF 5% 50V
C5	4000293	47pF 5% 50V	C14	4000291	470pF 5% 50V
C6	4010170	2,2nF 10% 50V	C15	4000289	15nF 10% 50V
C7	4000292	100pF 5% 50V	C16-	4000287	220nF -20+80% 25V
C8	4000287	220nF -20+80% 25V	C17		
C9	4000291	470pF 5% 50V			

L1	8020626	Coil 470µH 5%

P	7210572	Socket 6/6

BP1	8030056	455KHz 1kHz

PCB 03, 8087010
RELAY BOX

TR1	8320510	**20**	BC 558B	TR12-	8320510	**20**	BC 558B
TR2-	8320509	**20**	BC 548B	TR14			
TR3				TR15-	8320509	**20**	BC 548B
TR4	8320510	**20**	BC 558B	TR18			
TR5	8320509	**20**	BC 548B	TR19	8320552	**20**	BC 327-25
TR6	8320510	**20**	BC 558B	TR20	8320510	**20**	BC 558B
TR7	8320509	**20**	BC 548B				

D1	8300058	**209**	1N4148	D3	8300609	**209**	3.9V 2% 0.4W
D2				D4	8300058	**209**	1N4148

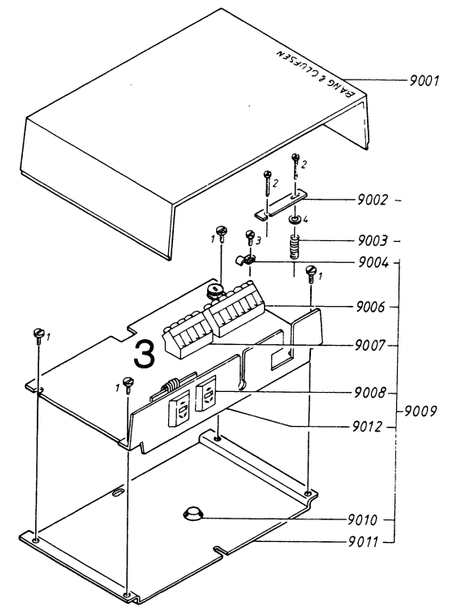
R38	5370337	47kΩ 20% 0,1W

C1	4010105	1nF 10% 63V	C9	4200561	10µF 20% 50V
C2	4200515	4.7µF 20% 25V	C11	4010105	1nF 10% 63V
C3-	4200515	4.7µF 20% 25V	C12	4200711	1000µF -10+30% 10V
C5			C13	4200511	100µF 20% 10V

P1	7505027	Terminal strip 7pol.	P4	7505026	Terminal strip 5pol.
P2-	7210521	Socket 4pol.	P5	6200044	Bandcable 6 leder
P3					

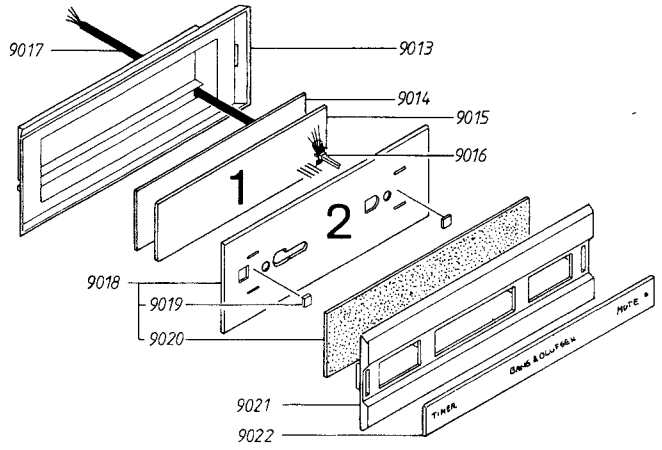
RL	7600089	Relay 5

LIST OF MECHANICAL PARTS



9001	3164614	Cover	9007	7505026	Terminnal strip, 5-pole
9002	2641122	Clamp			
9003	2812081	Spring	9008	7210521	Socket, 4-pole, loudspeaker
9004	2515050	Cable clamp			
9006	7505027	Terminal strip, 7-pole	9009	8087010	Relay box complete
			9010	3103066	Rubber foot
9006	7505027	Terminal strip, 7-pole	9011	3454406	Bottom plate
			9012	3168660	Socket panel

Transceiver type 2021



9013	3452535	Rear plate, black	9017	6100115	Wire
	3114368	Rear plate, white	9018	8002877	PCB 2
9014	3947265	Aluminium foil	9019	7500148	Contact spring
9015	8001104	PCB 1	9020	3947256	Foil
	2576208	Spacer for LED	9021	3114263	Front plate, black
	3951025	Spacer for transmitting diode		3114370	Front plate, white
9016	3152214	Cable binder	9022	2568941	Button

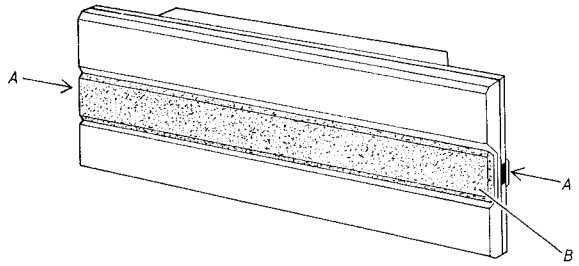
Survey of screws and washer

1	2039033	Screw 3 x 5mm	3	2036037	Screw 2.5 x 6mm
2	2034084	Screw 2 x 4mm	4	2622363	Fibre washer

8712003 IR Receiver, complete

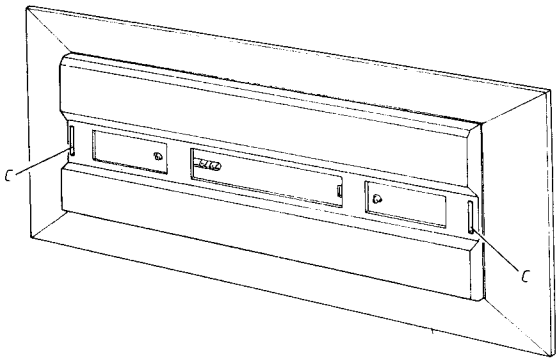
ADSKILLELSE
Transceiver

DISMANTLING
Transceiver



Transceiveren adskilles ved at presse en skruetrækker ind i rillen (A) på siden af transceiveren og samtidig trække i bagpladen.

Dismantle the transceiver by pressing a screwdriver into the groove (A) on one side of the transceiver and pulling the back plate backwards.



Hvis transceiveren er monteret i en konverterplade, bestillingsnr. 7219067, adskilles transceiveren ved at tage betjeningsskinnen (B) af og derefter presse en skruetrækker ned i rillerne (C).

If the transceiver is mounted in a converter plate, part no. 7219067, dismantle the transceiver by removing the operation rail (B) and pressing a screwdriver into the grooves (C).

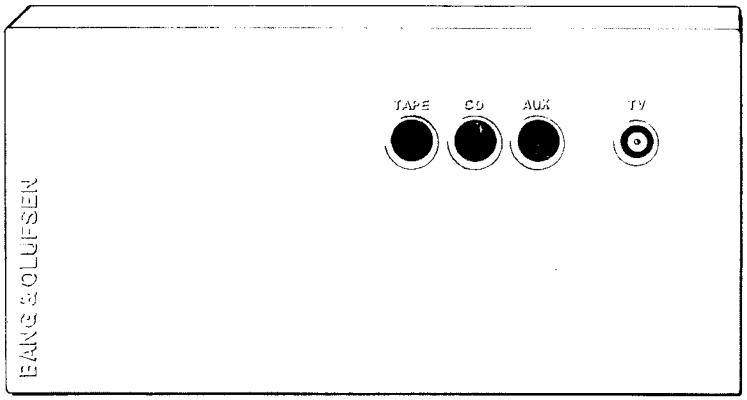
SERVICETIPS
Ved udskiftning af 1IC1 eller 1IC2 kan OPTION indstilling være ændret, hvilket medfører ændret betjening hos kunden.

Dette afhjælpes ved at indstille OPTION iflg. opstillingsvejledning for Master Control (Link^{TM}2).

SERVICE TIPS
When replacing 1IC1 or 1IC2, the OPTION setting may be changed, causing a changed operation for the customer.

This can be remedied by selecting the appropriate OPTION according to the instructions in the Master Control Link^{TM}2 installation guide.

MASTER CONTROL LINK 2AV, TYPE 2020



TECHNICAL SPECIFICATIONS

Master Control Link 2AV	**Type No. 2020**
Frequency response IHF	20-20,000 Hz
Harmonic distortion, THD IHF	<0.05%
Signal-to-noise ratio	>80 dB A-weighted
Channel separation 10,000 Hz	>60 dB
Level difference between rooms	12 dB adjustments range without change in center room
Input sensitivity/impedance:	
Master Control Link	20 V/100 kohms
Tape, CD, TV (Aux)	200 mV/70 kohms
Output:	
Power Link	1 V/100 ohms
Tape, TV (Aux)	200 mV/3 kohms
Power supply, MCL adaptor 2024	220 volts
Power consumption	2.5 watts
Dimensions W x H x D	30 x 15 x 3 cm
Weight	0.9 kg

Subject to change without notice

DIAGRAMFORKLARING

På diagrammerne er der angivet typenumre på transistorer og IC'er. Hvis positionsnummeret er efterfulgt af en stjerne, skal reservedelsnummeret altid benyttes, da denne komponent er specielt udvalgt, f.eks. TR102*.

Komponenttryk og koordinatsystem

De største printplader er forsynet med komponenttryk og et koordinatsystem på både print- og komponentside.
På diagrammerne er enhver komponent forsynet med et koordinatnummer. Dette fortæller i hvilket koordinat på printpladen, komponenten er placeret. Koordinatnumrene er angivet med mindre skrifttype end positionsnumrene.

Styrekredsløb

I visse styrekredsløb er den aktive tilstand angivet med en funktions- eller bogstavsangivelse. Denne kan eksempelvis være $\overline{\text{ST.BY.}}$ = »low« i stand-by-stilling eller ST.BY. = »high« i stand-by-stilling.

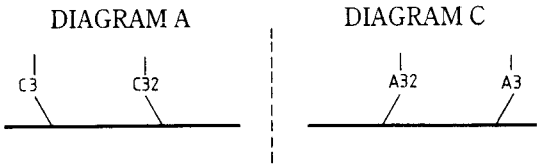
Ledningsforbindelser

Ledningsforbindelserne på diagrammerne er samlet i »bundter«. De enkelte ledninger er forsynet med en af følgende koder:

INTERN FORBINDELSE PÅ EN DIAGRAMSIDE

Interne forbindelser på en diagramside angives med et tal. Knækket på ledningen viser, i hvilken retning, den anden ende af ledningen findes.

FORBINDELSE TIL EN ANDEN DIAGRAMSIDE



Forbindelsen til en anden diagramside angives med et tal samt et bogstav for det diagram, forbindelsen går til.

Forsyningsspændinger

Alle forsyningsspændinger i diagrammerne er angivet med en pil og en spændingsangivelse.

Eksempel:
Ved siden af spændingsangivelsen står der f.eks. 7 CON. Dette betyder, at den pågældende forsyningsspænding går til 7 steder på den pågældende diagramside (7 CON. = 7 connections).

EXPLANATION OF DIAGRAM

Type numbers of transistors and ICs are indicated on the diagrams.
If the position number is followed by an asterisk the spare part number must always be used because the component in question has been specially selected, e.g. TR102*.

Component print and coordinate system

The largest PCBs have component prints and a coordinate system on both the print and the component side.
On the diagrams every component has a coordinate number. This indicates in which coordinate on the PCB the component is situated. The coordinate numbers are written in smaller print types than the position numbers.

Control Circuit

In certain control circuits the active mode is indicated by a function term or by an abbreviation. This may be e.g. $\overline{\text{ST.BY.}}$ = low in the stand-by mode or ST.BY. = high in the stand-by mode.

Wiring Connections

The wiring connections on the diagrams are assembled in 'bundles'. The individual wires are provided with one of the following codes:

INTERNAL CONNECTION ON ONE DIAGRAM PAGE

Internal connections on a diagram page are indicated by a number. The bend of the wire indicates in which direction the other end of the wire is found.

CONNECTION TO ANOTHER DIAGRAM PAGE

A connection to another diagram page is indicated by a number as well as by a letter of the diagram to which the connection leads.

Supply Voltages

All supply voltages in the diagrams are indicated by an arrow and a voltage indication.

Example:
"7 CON.". This means that the supply voltage in question goes to 7 different places on the diagram page in question (7 CON = 7 connections).

BLOCK DIAGRAM

BLOCK DIAGRAM MCL 2AV

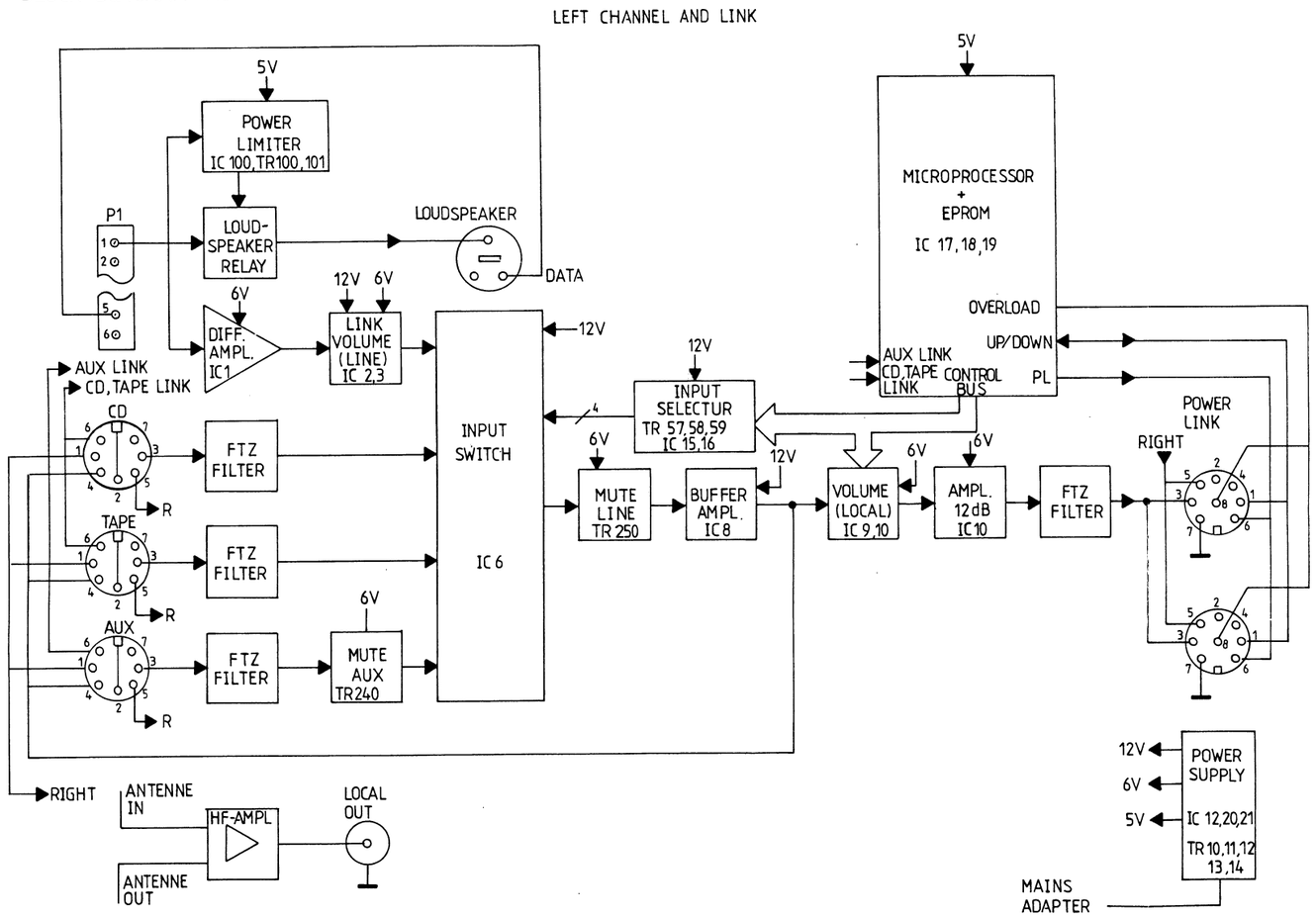


DIAGRAM A MCL 2AV, type 2020

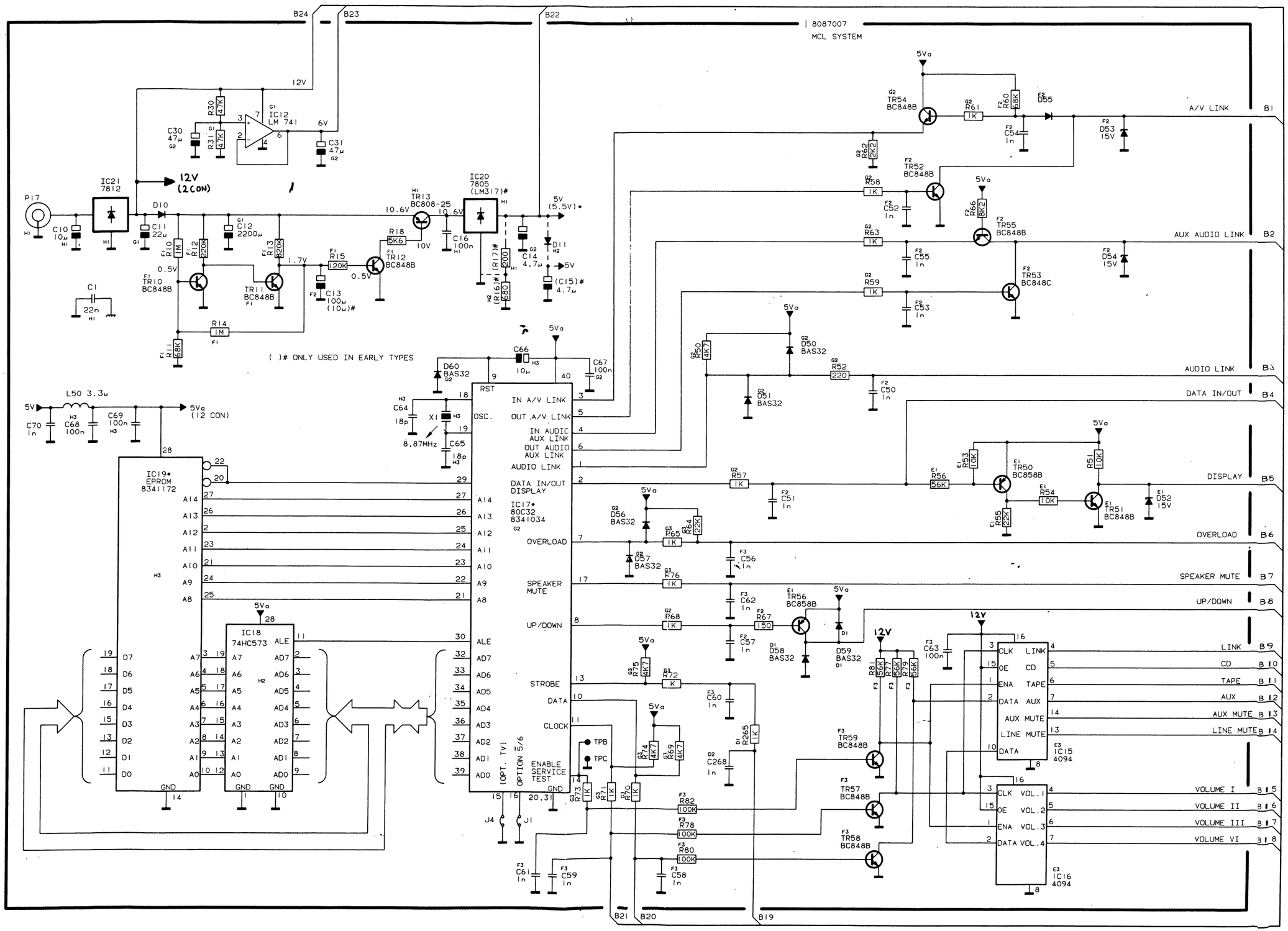
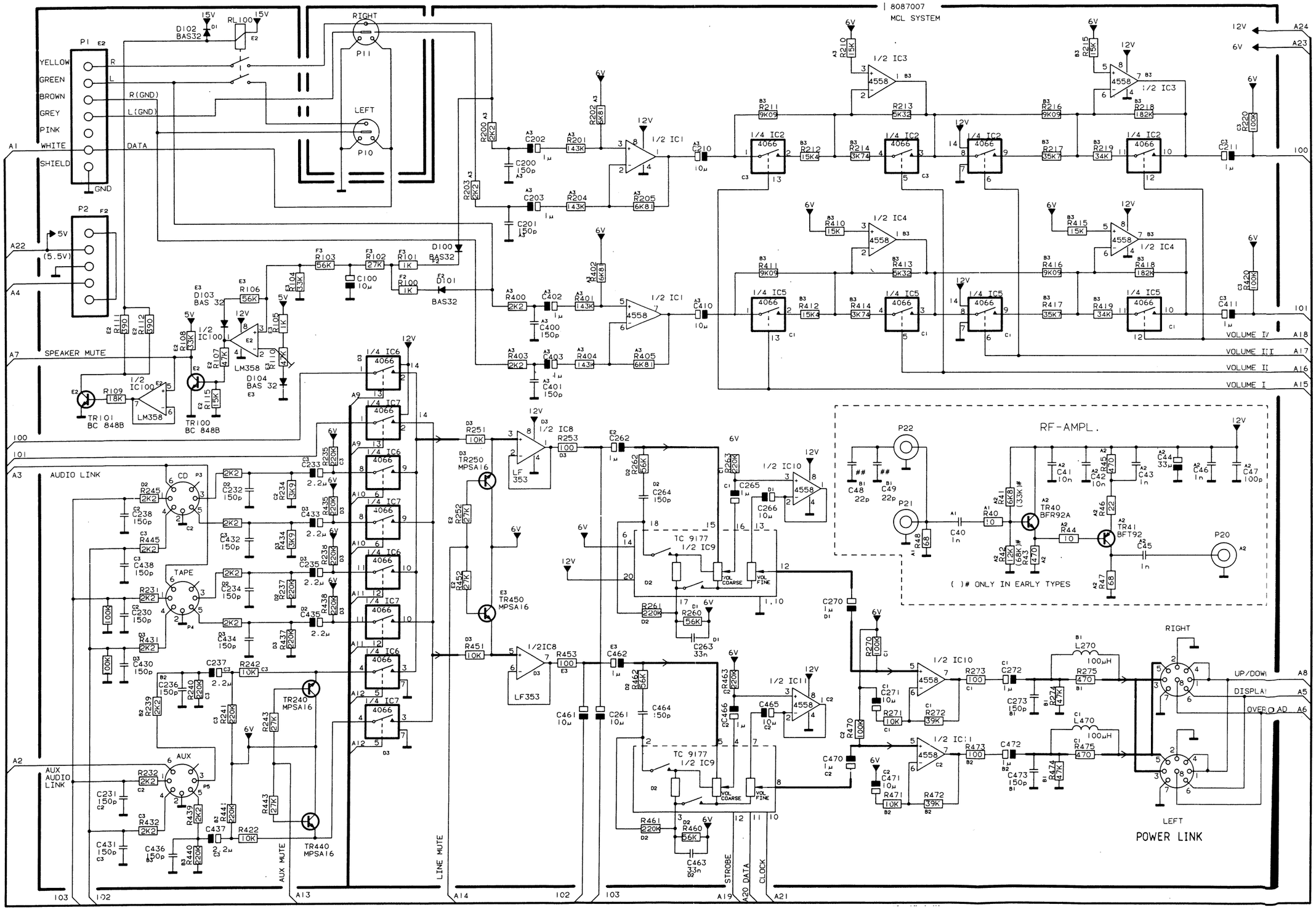
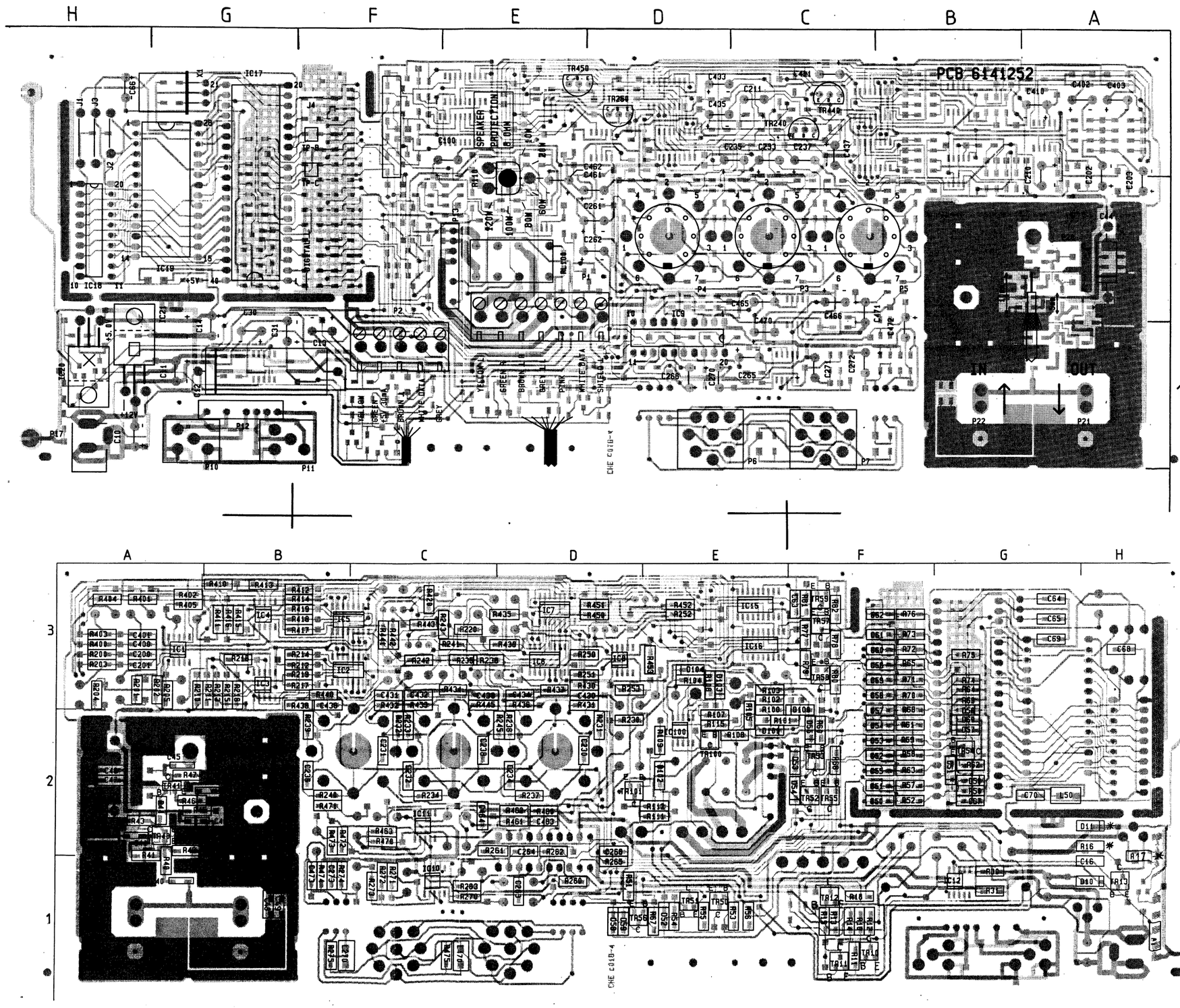


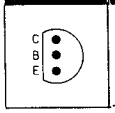
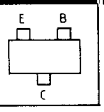
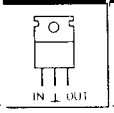
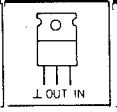
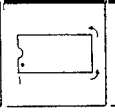
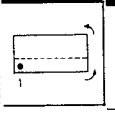
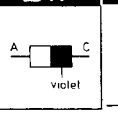
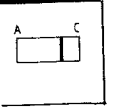
DIAGRAM B MCL 2AV, type 2020



PCB DRAWINGS



LIST OF ELECTRICAL PARTS

19	51	105	108	136	138	217	250
							

Resistors not referred to are standard see page 4-1

△ Indicates that static electricity may destroy the component
* Specially selected or adapted sample

PCB 01, 8087007
MCL SYSTEM

IC1△	8341022	**138**	4558	IC12	8341032	**138**	741
IC2△	8341024	**138**	4066	IC15-	8341025	**138**	4094
IC3-△	8341022	**138**	4558	IC16			
IC4				IC17△*	8341034	**136**	80C32
IC5-△	8341024	**138**	4066	IC18△	8341046	**136**	74HC573
IC7				IC19△	8341093	**136**	27C256
IC8△	8341033	**138**	LF353 TL072	#IC20	8340244	**108**	LM 317
IC9△	8340760	**136**	TC 9177	IC20	8340065	**105**	LM 340-05
IC10-△	8341022	**138**	4558	IC21	8340817	**105**	7812
IC11				IC100	8341098	**138**	LM 358

In early types

TR11-	8320615	**51**	BC 848B	TR56	8320616	**51**	BC 858B
TR12				TR57-	8320615	**51**	BC 848B
TR13	8320609	**51**	BC 808-25	TR59			
TR40	8320750	**51**	BFR92A	TR100-	8320615	**51**	BC 848B
TR41	8320749	**51**	BFT92	TR101			
TR50	8320616	**51**	BC 858B	TR240	8320525	**19**	MPS A16
TR51-	8320615	**51**	BC 848B	TR250	8320525	**19**	MPS A16
TR55							

D10	8300631	**250**	GL34J	D55	8300606	**217**	LL4448
D11	8300482	**217**	LL 4148	D56	8300482	**217**	LL4148
D50-	8300482	**217**	LL4148	D57-	8300482	**217**	LL4148
D51				D60			
D52-	8300584	**250**	BZV 55 C15	D100-	8300482	**217**	LL4148
D54				D104			

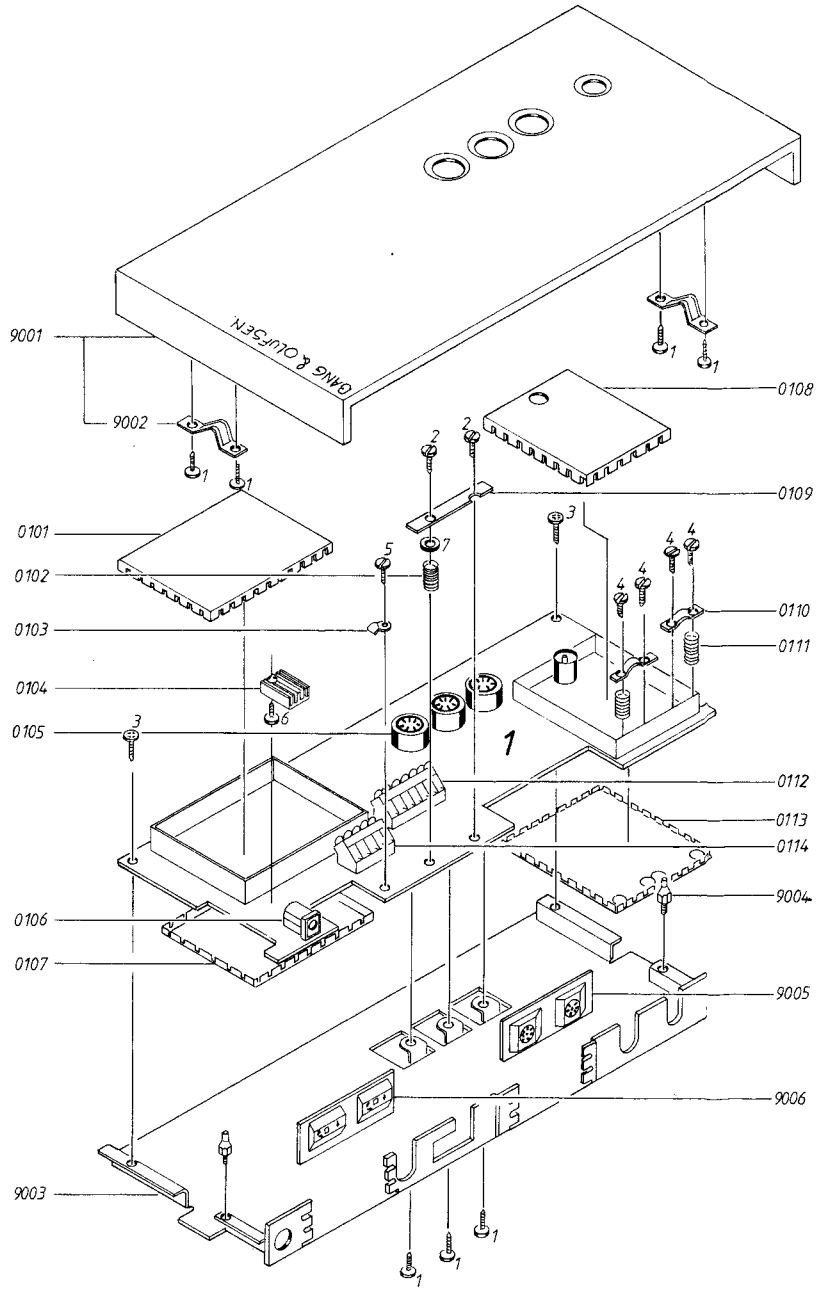
R16	5021074	680Ω 1% 1/4W		R212	5021022	15,4kΩ 1% 1/4W	
R17	5021075	200Ω 1% 1/4W		R213	5021024	5,62kΩ 1% 1/4W	
R110	5370337	47kΩ 20% 0,1W		R214	5021025	3,74kΩ 1% 1/8W	
R201	5021020	143kΩ 1% 1/4W		R216	5021023	9,09kΩ 1% 1/4W	
R202	5021021	6,81kΩ 1% 1/4W		R217	5021026	34,8kΩ 1% 1/8W	
R204	5021020	143kΩ 1% 1/4W		R218	5021027	57,6kΩ 1% 1/4W	
R205	5021021	6,81kΩ 1% 1/4W		R219	5021028	10,7kΩ 1% 1/4W	
R211	5021023	9,09kΩ 1% 1/4W					

C1	4000290	22nF 10% 50V		C70	4010132	1nF 10% 50V	
C10	4200484	10µF 20% 25V		C100	4200561	10µF 20% 50V	
C11	4200544	22µF 20% 16V		C200-	4000229	150pF 5% 50V	
C12	4200818	2200µF 20% 16V		C201			
C13	4200512	1µF 20% 50V		C202-	4200512	1µF 20% 50V	
C14-	4200617	47µF 20% 10V		C203			
C15				C210	4200510	10µF 20% 16V	
C16	4010166	100nF -20+80% 50V		C211	4200512	1µF 20% 50V	
C30-	4200617	47µF 20% 10V		C230-	4000229	150pF 5% 50V	
C31				C232			
C40	4010132	1nF 10% 50V		C233	4200517	2,2µF 20% 50V	
C41-	4010157	10nF 10% 50V		C234	4000229	150pF 5% 50V	
C42				C235	4200517	2,2µF 20% 50V	
C43	4010132	1nF 10% 50V		C236	4000229	150pF 5% 50V	
C44	4200414	33µF -10+59% 16V		C237	4200517	2,2µF 20% 50V	
C45-	4010132	1nF 10% 50V		C238	4000229	150pF 5% 50V	
C46				C261	4200510	10µF 20% 16V	
C47	4000292	100pF 5% 50V		C262	4200512	1µF 20% 50V	
C48-	4000309	22pF 5% 50V		C263	4010175	33nF 10% 50V	
C49				C264	4000229	150pF 5% 50V	
C50-	4000342	1nF 10% 50V		C265	4200512	1µF 20% 50V	
C63				C266	4200510	10µF 20% 16V	
C64-	4000276	18pF 5% 50V		C268	4000342	1nF 10% 50V	
C65				C270	4200512	1µF 20% 50V	
C66	4200828	10µF 20% 16V		C271	4200510	10µF 20% 16V	
C67-	4010166	100nF -20+80% 50V		C272	4200512	1µF 20% 50V	
C69				C273	4000229	150pF 5% 50V	

L50	8020609	Coil 3.3µH	L270	8020705	Coil 100µH
P1	7505027	Terminal strip 7pole	P9	7200056	Socket 28pole
P2	7505026	Terminal strip 5pole	P10-P11	7210521	Plug 4pole
P6-P7	7210518	Plug 8pole	P17	7210446	Plug
RL1	7600096	Relay 12VDC			
X1	8090005	Crystal 8.8672MHz			
W1	6275888	Cable from HT	W3	6200043	Bandcable
W2	6200042	Bandcable			

8040000	Adapter EU
8040001	Adapter US
8040005	Adapter GB
8040007	Adapter S/CH

List of mechanical parts



01Modul	8087007		0108	3302441	Screen
0101	3302444	Screen	0109	2641122	Clamp
0102	2812122	Spring	0110	2515058	Cable clamp
0103	2515050	Clamp	0111	2812122	Spring
0104	3358243	Heatsink	0112	7505027	Switch 1-pole
0105	7210669	Socket 7-pole	0113	3302442	Screen
0106	7210446	Socket	0114	7505036	Switch 1-pole
0107	3302444	Screen			

9001	3164692	Cover, grey	9004	2993036	Peg
	3164645	Cover, white	9005	3168724	Socket panel, big
	3164869	Cover without		7210518	Socket, 1-pole
		antenna plug, white	9006	3168738	Socket panel, small
9002	2819238	Spring		7210521	Socket, 1-pole
9003	3454500	Bottom plate			

Survey of screws

1	2013156	PT-screw 2.5x8mm	5	2036037	Screw AM 2.5x6mm
2	2034084	Screw AM 2x14mm	6	2038096	Screw M3 x5mm
3	2038122	Screw AM 3x6mm	7	2622363	Washer
4	2038216	Screw AM 3x10mm			

Parts not shown

3390233	Outer carton
3392034	Cardboard insert
3397651	Packing
3390358	Bag with parts

MCL-RAM/ROM TEST
For at udføre denne test på MCL 2AV skal MCL 2AV tilsluttes en TRANSCEIVER TYPE 2021.

MCL 2AV bringes i TEST-MODE ved at gøre følgende:

- Afbryd netforsyningen.
- Kortslut TP-B og TP-C (under skærmdåsen til microprocessoren).
- Tilslut netforsyningen.
- Fjern kortslutningen mellem TP-B og TP-C.

RAM/ROM/TEST:
- På BEOLINK 1000 trykkes [SHIFT] [0] i hurtig rækkefølge.

Testprogrammet stopper.

- Check RAM/ROM ved at måle spændingen på microprocessoren IC17:

BEN 14			BEN 12		
RAM	OK	= 5 V	ROM	OK	= 5 V
RAM	FEJL	= 0 V	ROM	FEJL	= 0 V

Testprogrammet starter igen efter ca. 15. sek.

Bring MCL 2AV ud af TEST-MODE på følgende måde:

- Afbryd netforsyningen.

MCL-RAM/ROM TEST
To carry out this test on the MCL 2AV, the MCL 2AV must be connected to a TRANSCEIVER TYPE 2021.

Set the MCL 2AV in the TEST MODE in the following way:

- Disconnect the MCL 2AV from the mains supply.
- Short-circuit the TP-B and TP-C (under the shielded box for the microprocessor).
- Connect the MCL 2AV to the mains supply.
- Remove the short-circuit between TP-B and TP-C.

RAM/ROM TEST:
- On BEOLINK 1000, press [SHIFT] [0] in rapid succession.

The test programme stops.

- Check the RAM/ROM by measuring the voltage on the microprocessor IC17:

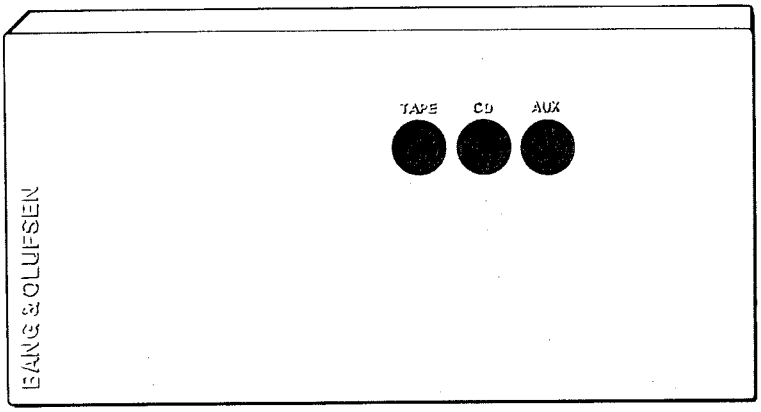
PIN 14			PIN 12		
RAM	OK	= 5 V	ROM	OK	= 5 V
RAM	FAULTY	= 0 V	ROM	FAULTY	= 0 V

After approx. 15 seconds the programme starts again.

Cancel the test mode in the following way:

- Disconnect the MCL 2AV from the mains supply.

MASTER CONTROL LINK 2AV, type 202x, 203x, 204x



TECHNICAL SPECIFICATIONS See page 2-7

EXPLANATION OF DIAGRAM See page 2-8

BLOCK DIAGRAM See page 2-9

PCB DRAWINGS See page 2-12

LIST OF ELECTRICAL PARTS
PCB 01, 8087014
MCL SYSTEM

IC19Δ* 8341172 **136** 27C 256

IC21 8340049 **105** 7812

8040000 Adaptor EU
8040001 Adaptor US
8040005 Adaptor GB
8040007 Adaptor S/CH

All other parts see page 2-13 and 2-14

LIST OF MECHANICAL PARTS See page 2-15

MCL – RAM/ROM TEST See page 2-16

TYPE SURVEY

X-TRA ACTIVE SPEAKERS

2026 EU
2027 GB
2028 US
2029 S/CH
2025 J/AUS

X-TRA TV

2031 EU
2032 GB
2033 US
2034 S/CH
2040 AUS

* Specially selected or adapted sample
Δ Indicates that static electricity may destroy the component

DIAGRAM C MCL 2AV, type 202x, 203x, 204x

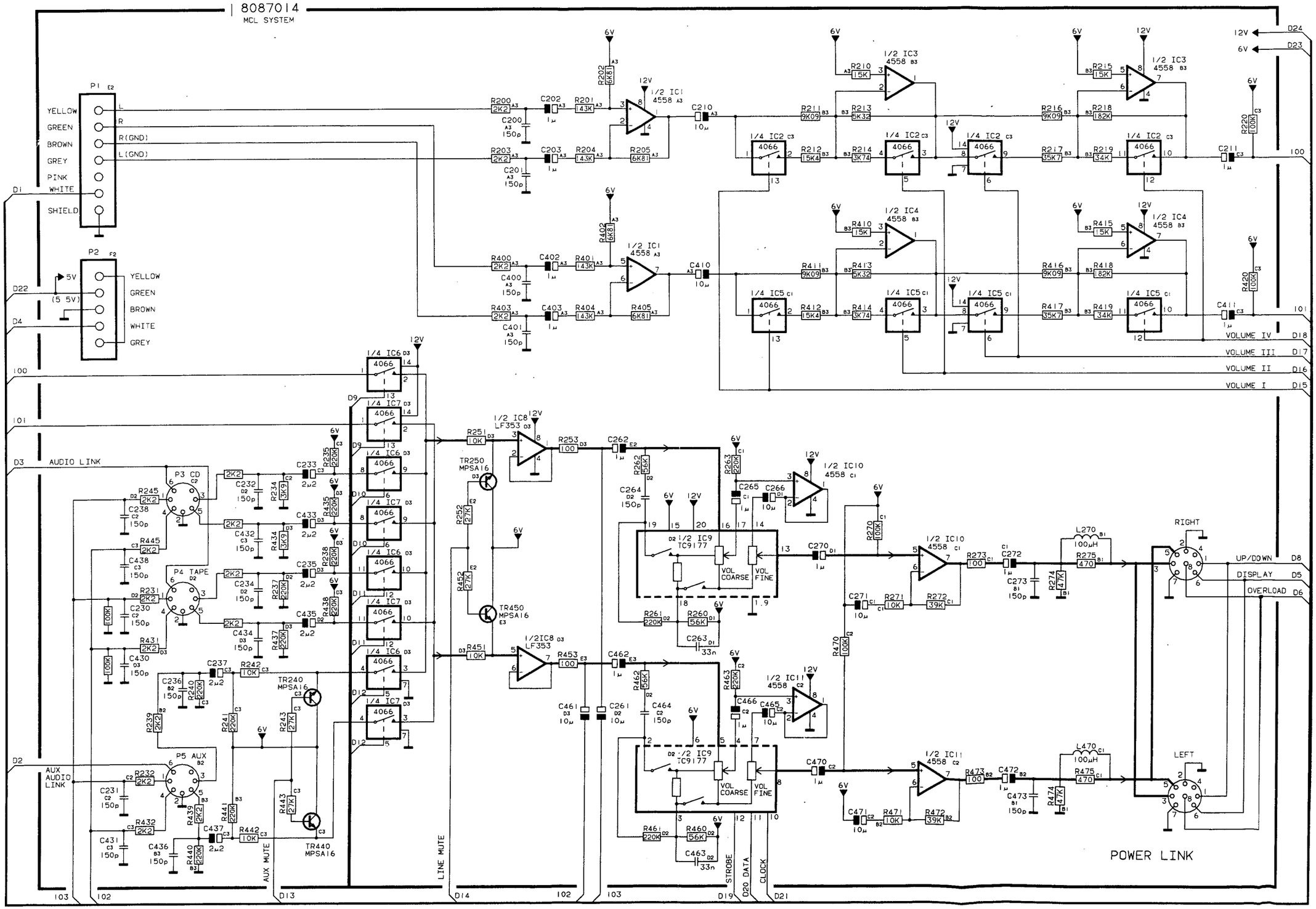
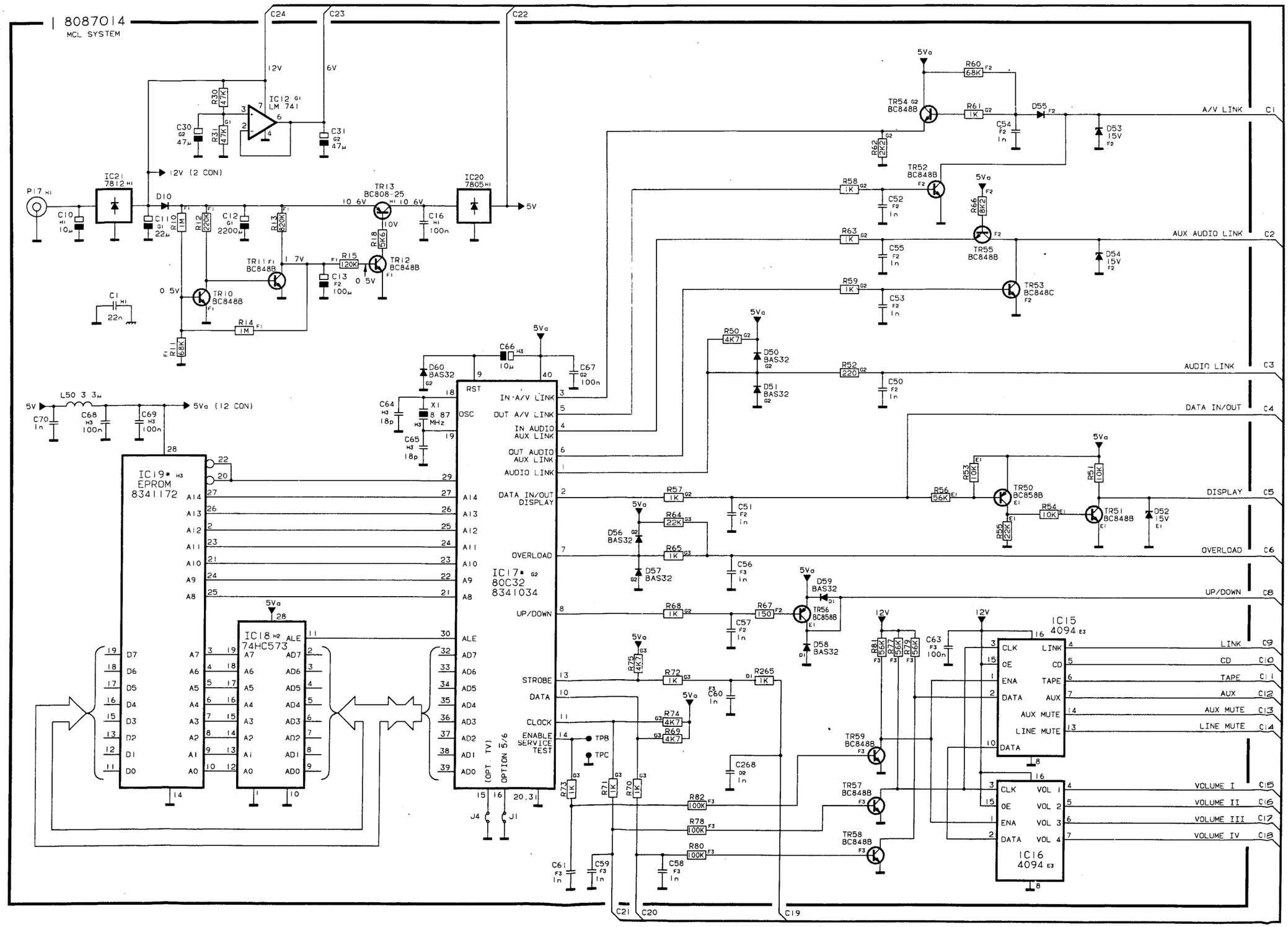
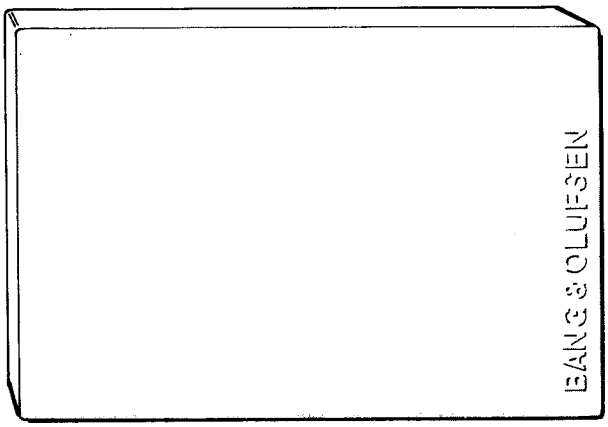


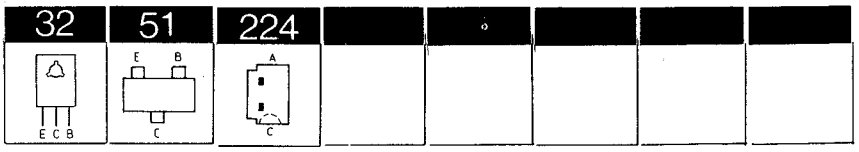
DIAGRAM D MCL 2AV, type 202x, 203x, 204x



MASTER CONTROL LINK 2 EXPANDER, TYPE 2007/2008



LIST OF ELECTRICAL PARTS

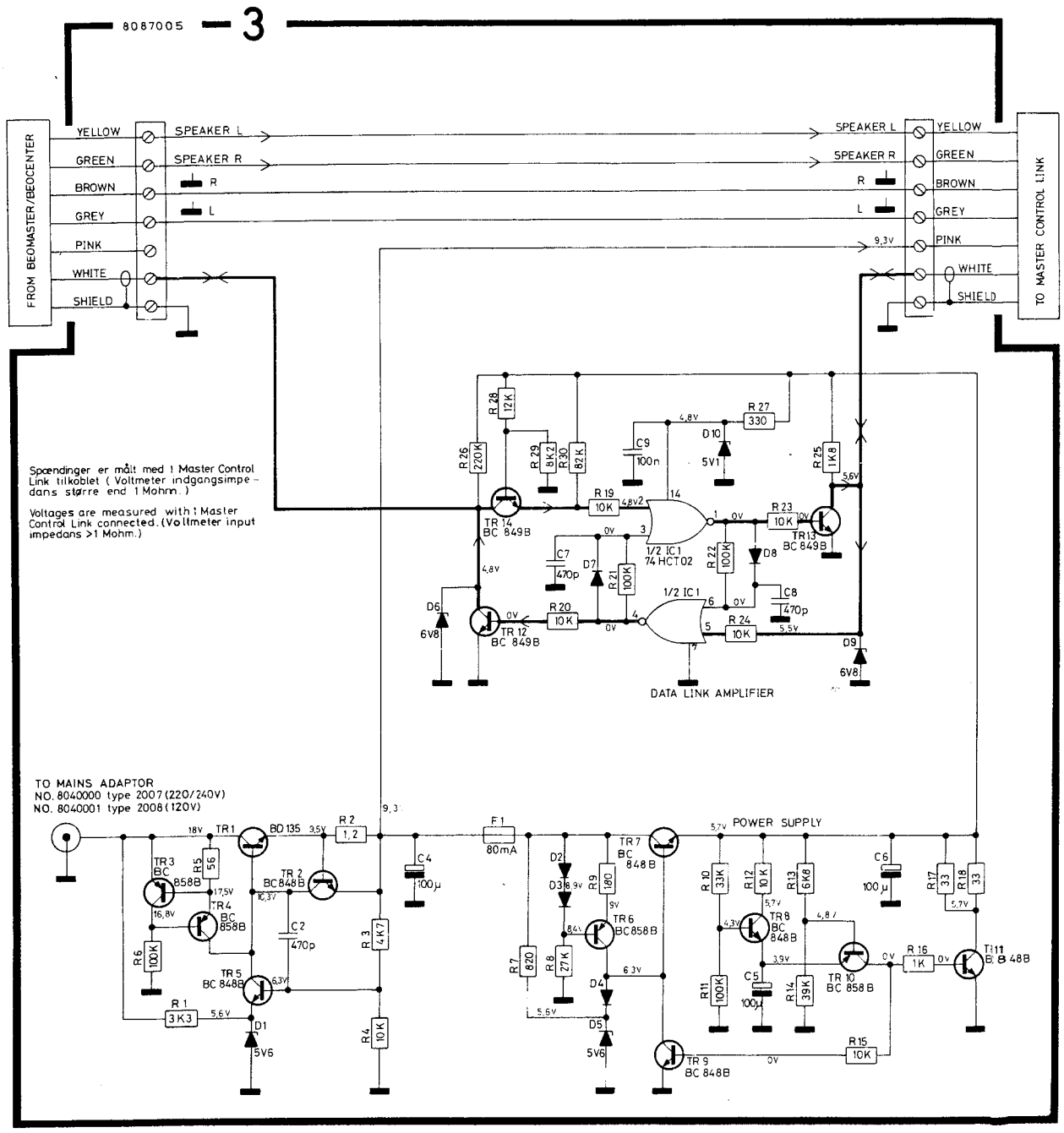


8087006, PCB 03
Relay Box

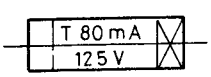
Resistors not referred to are standard see page 4-1

IC1	8340959		74 HCT 02				
TR1	8320292	**32**	BD 137	TR7-TR9	8320615	**51**	BC 848B
TR2	8320615	**51**	BC 848B				
TR3-TR4	8320616	**51**	BC 858B	TR10	8320616	**51**	BC 858B
				TR11	8320615	**51**	BC 848B
TR5	8320615	**51**	BC 848B	TR12-TR14	8320636	**51**	BC 849B
TR6	8320616	**51**	BC 858B				
D1	8300562		Z 5.6V	D7-D8	8300482		LL 4148
D2-	8300482		LL 4148				BAS 32
D4			BAS 32	D9	8300520	**224**	KV 1226X
D5	8300562		Z 5.6V	D10	8300563		Z 5.1 V
D6	8300520	**224**	KV 1226X				
R101	5011287	SMD Jumper		R105	5011287	SMD Jumper	
R102	5011287	SMD Jumper		R106	5011287	SMD Jumper	
R103	5011287	SMD Jumper		R107	5011287	SMD Jumper	
R104	5011287	SMD Jumper					
C2	4000291	470 pF 5% 50V		C7	4000291	470 pF 5% 50V	
C4	4200129	100 µF -20+50% 16V		C8	4000291	470 pF 5% 50V	
C5	4200478	100 µF 20% 10V		C9	4010166	100 nF -20+80% 50V	
C6	4200478	100 µF 20% 10V					
F1	6600073	80 MAT 5V					
	7210446	DC Socket					

DIAGRAM MCL 2 EXPANDER, type 2007/2008



Explanation of the fuse symbols used in the set
Explanation de symboles du fusible utilisés dans l'appareil

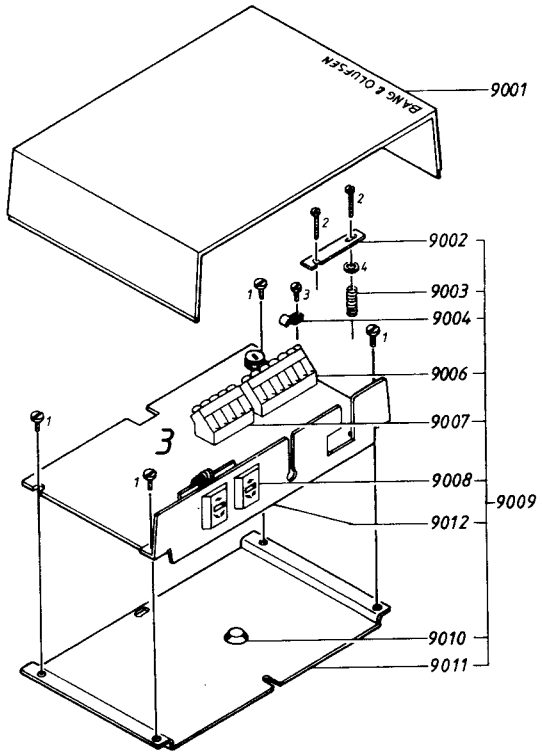


Replace with same type 80 milliamperes 125 volts slow acting fuse.

Remplacer par un fusible de même type retardé et de 80 milliampères 125 volts.

LIST OF MECHANICAL PARTS

Relay Box



9001	3164614	Lid
9002	2641122	Clamp
9003	2812081	Spring
9004	2515050	Cable clamp
9006	7505027	Terminal strip 7 pole
9007	7505027	Terminal strip 7 pole
9009	8087005	Relay box complete
9010	3103066	Rubber foot
9011	3454406	Bottom plate
9012	3168668	Socket panel

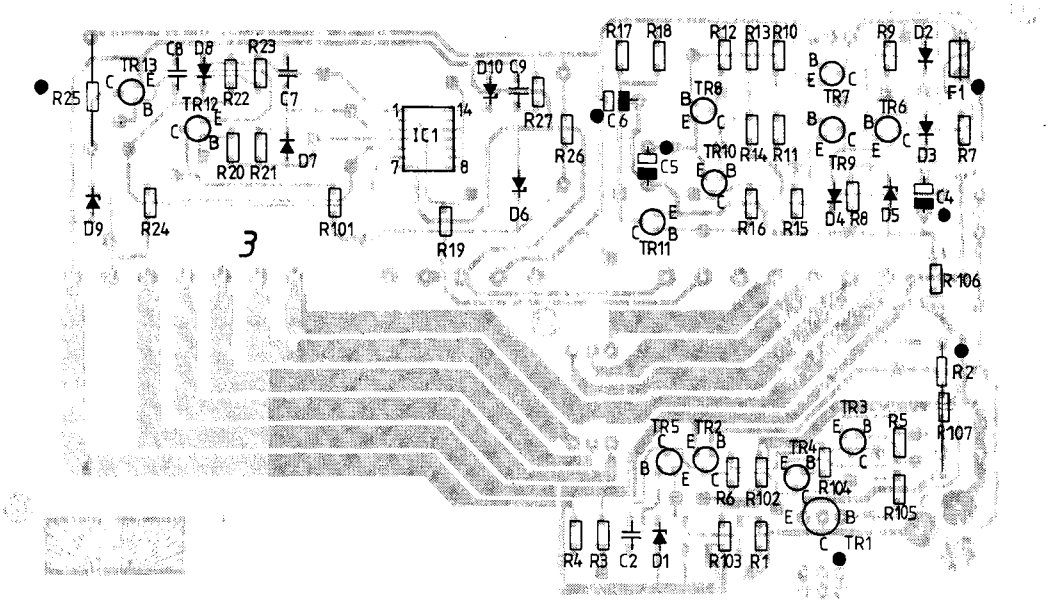
Survey of screws, washers etc.

1	2039033	Screw M 3x6
2	2034084	Screw AM 2x14
3	2036037	Screw AM 2.5x6
4	2622363	Fibre washer
5	2038216	Screw AM 3x10
6	2380011	Nut M3
7	2622231	Mica washer
8	2624013	Spring washer
9	2623018	Washer

Parts not shown

3390281	Bag with accessories
3397625	Packing complete
3502606	Installation instruction
8920220	Adapter GB
8920230	Adapter USA
8920240	Adapter EU

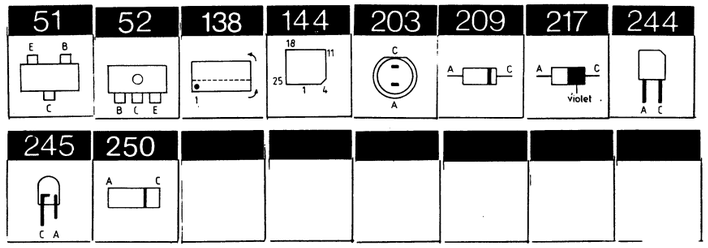
PCB DRAWING



● The component is placed on the primary side.

TRANSCEIVER, TYPE 2021

LIST OF ELECTRICAL PARTS



Resistors not referred to are standard, see page 4-1

△ indicates that static electricity may destroy the component
* Specially selected or adapted sample

PCB 01, 8001104
Microcomputer

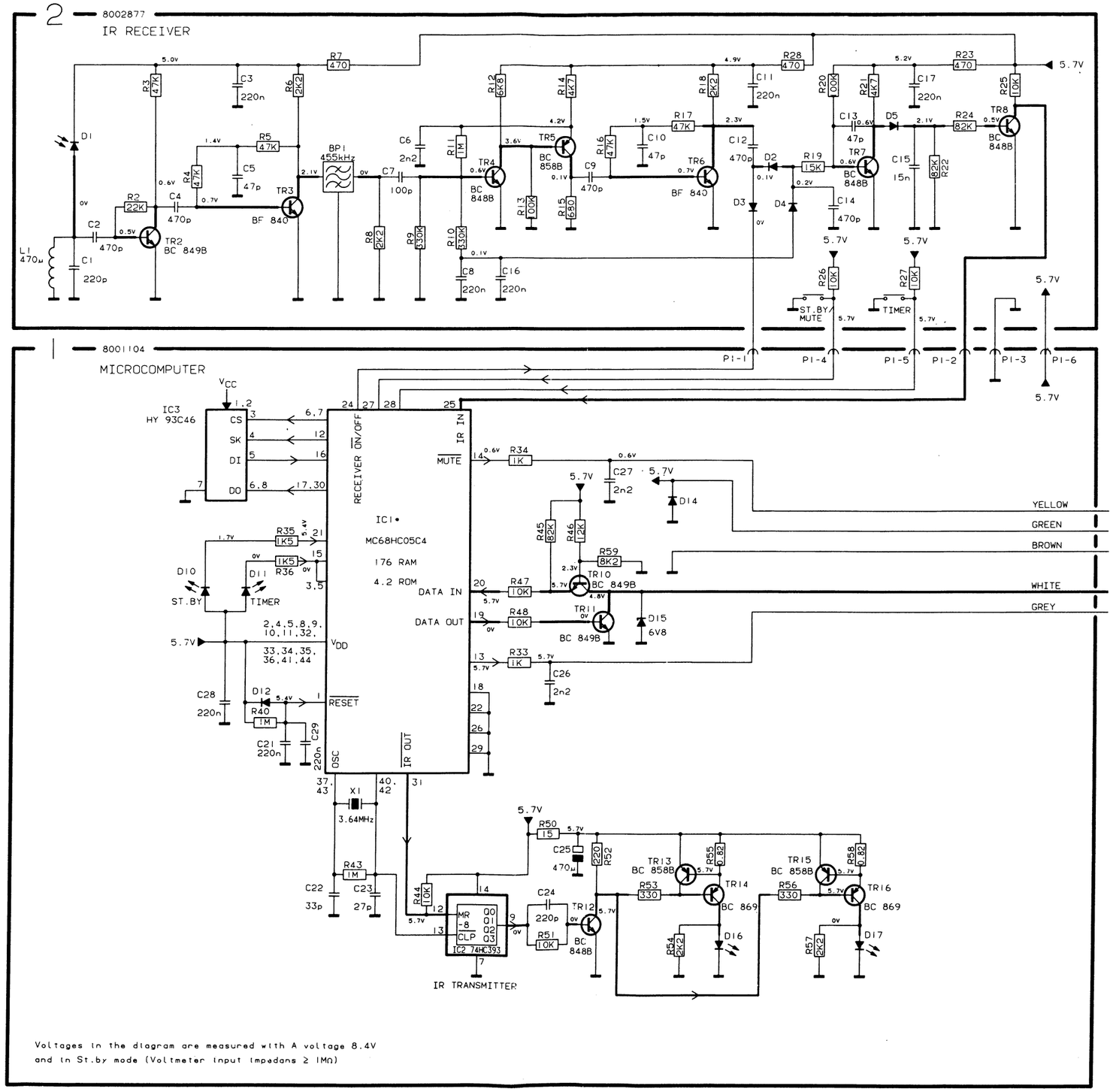
IC1*△	8341155	**144**	MC68 HC05C4	IC3	8341016	**138**	HY93C46
IC2△	8340830	**138**	74 HC 393				
TR10- TR11	8320636	**51**	BC 849B	TR14	8320684	**52**	BC 869
				TR15	8320616	**51**	BC 858B
TR12	8320615	**51**	BC 848B	TR16	8320684	**52**	BC 869
TR13	8320616	**51**	BC 858B				
D10- D11	8330157	**245**	TLHR 4103	D15	8300584	**250**	BZV 55 C15
				D16- D17	8330140	**203**	TSHA 5502
D12	8300482	**217**	LL4148				
D14	8300482	**217**	LL4148				
R55	5011281	0.82Ω 10% 1/4W		R58	5011281	0.82Ω 10% 1/4W	
C21	4000287	220nF -20+80% 25V		C26- C27	4010170	2.2nF 10% 50V	
C22	4000239	33pF 5% 50V					
C23	4000278	27pF 5% 50V		C28- C29	4000287	220nF -20+80% 25V	
C24	4000233	220pF 5% 50V					
C25	4200677	470µF -10+50% 6.3V					
X1	8030094	3.64MHz					

2-25
TRANSCEIVER

PCB 02, 8002877
IR Receiver

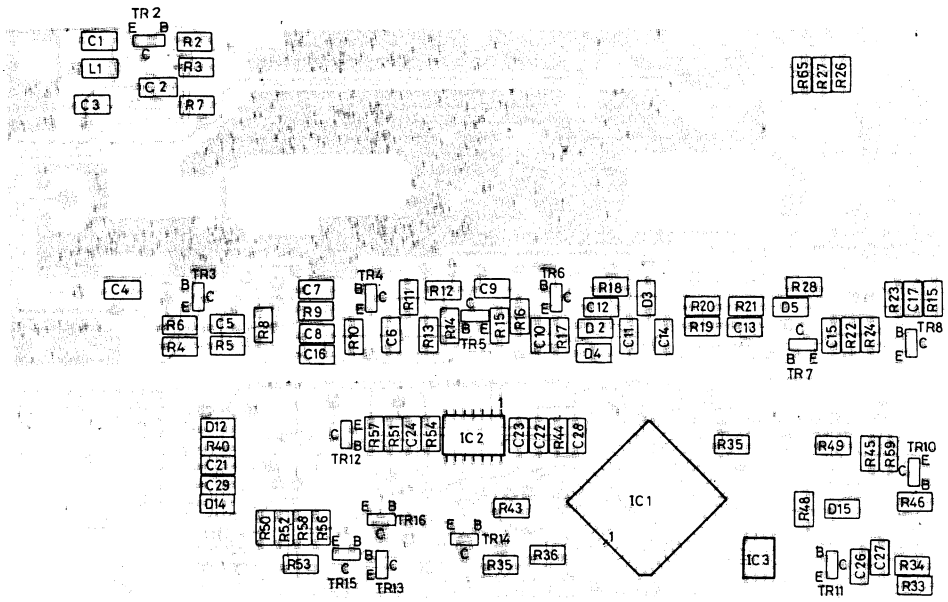
TR2	8320636	**51**	BC 849B	TR6	8320740	**51**	BF 840
TR3	8320740	**51**	BF 840	TR7- TR8	8320615	**51**	BC 848B
TR4	8320615	**51**	BC 848B				
TR5	8320616	**51**	BC 858B				
D1	8330145	**244**	BPW 82				
D2- D5	8300482	**217**	LL4148				
C1	4000233	220pF 5% 50V		C10	4000293	47pF 5% 50V	
C2	4000291	470pF 5% 50V		C11	4000287	220nF -20+80% 25V	
C3	4000287	220nF -20+80% 25V		C12	4000291	470pF 5% 50V	
C4	4000291	470pF 5% 50V		C13	4000293	47pF 5% 50V	
C5	4000293	47pF 5% 50V		C14	4000291	470pF 5% 50V	
C6	4010170	2.2nF 10% 50V		C15	4000289	15nF 10% 50V	
C7	4000292	100pF 5% 50V		C16- C17	4000287	220nF -20+80% 25V	
C8	4000287	220nF -20+80% 25V					
C9	4000291	470pF 5% 50V					
L1	8020626	Coil 470µH 5%					
P	7210572	Socket 6/6					
BP1	8030056	455 kHz 1 kHz					

DIAGRAM TRANSCEIVER, type 2021

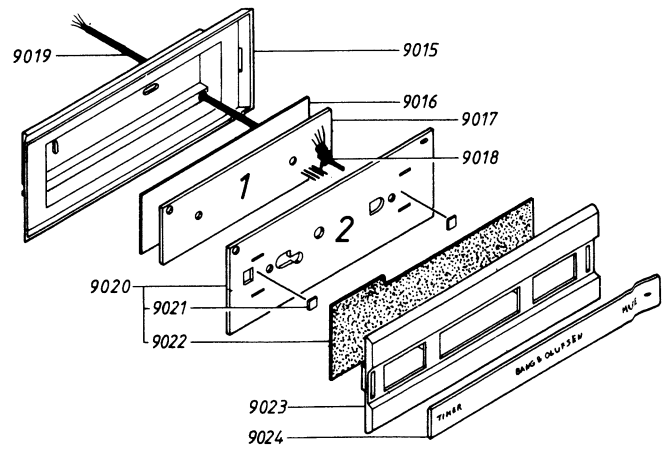


Voltages in the diagram are measured with A voltage 8.4V and in St.by mode (Voltmeter input impedans ≥ 1MΩ)

PCB DRAWING



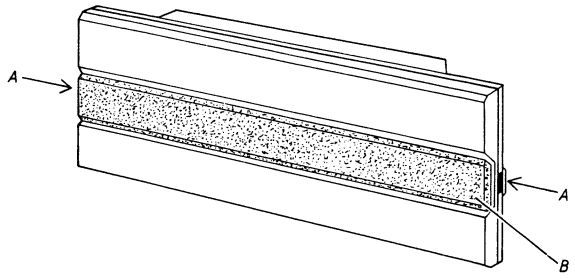
LIST OF MECHANICAL PARTS



9015	3452535	Rear plate, black	9019	6100115	Wire
	3114368	Rear plate, white	9020	8002877	PCB 2
9016	3947265	Aluminium foil	9021	7500148	Contact spring
9017	8001104	PCB 1	9022	3947256	Foil
	2576208	Spacer for LED	9023	3114263	Front plate, black
	3951025	Spacer for transmitting diode		3114370	Front plate, white
			9024	2568941	Button
9018	3152214	Cable binder			

	8712003	IR Receiver, complete

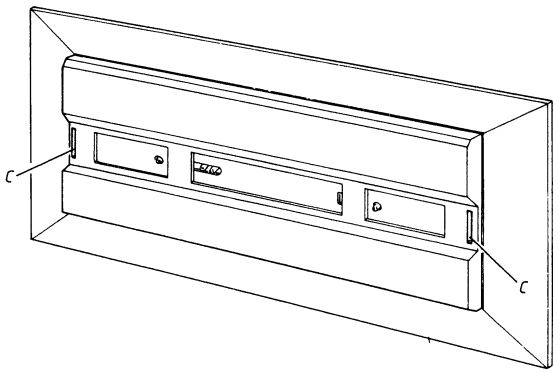
ADSKILLELSE
Transceiver



Transceiveren adskilles ved at presse en skruetrækker ind i rillen (A) på siden af transceiveren og samtidig trække i bagpladen.

DISMANTLING
Transceiver

Dismantle the transceiver by pressing a screwdriver into the groove (A) on one side of the transceiver and pulling the back plate backwards.



Hvis transceiveren er monteret i en konverterplade, bestillingsnr. 7219067, adskilles transceiveren ved at tage betjeningsskinnen (B) af og derefter presse en skruetrækker ned i rillerne (C).

If the transceiver is mounted in a converter plate, part no. 7219067, dismantle the transceiver by removing the operation rail (B) and pressing a screwdriver into the grooves (C).

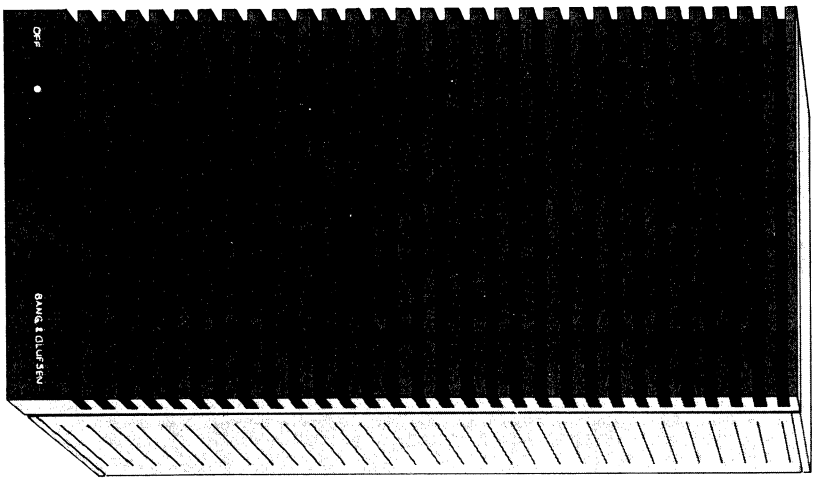
SERVICETIPS
Ved udskiftning af 1IC1 eller 1IC2 kan OPTION indstilling være ændret, hvilket medfører ændret betjening hos kunden.

Dette afhjælpes ved at indstille OPTION iflg. opstillingsvejledning for Master Control (Link^{TM}2).

SERVICE TIPS
When replacing 1IC1 or 1IC2, the OPTION setting may be changed, causing a changed operation for the customer.

This can be remedied by selecting the appropriate OPTION according to the instructions in the Master Control Link^{TM}2 installation guide.

MASTER CONTROL LINK 2P, TYPE 174x



TECHNICAL SPECIFICATIONS

Master Control Link 2P	**Type No. 1741, 1742, 1743, 1745**
Long-term max. output power IEC	2 x 60 watts/8 ohms
Total harmonic distortion IHF	<0.1% at 25 watts 20-20,000 Hz
Frequency response	20-30,000 Hz +0/-0.5 dB
Signal-to-noise ratio:	
A-weighted 1 W	>80 dB
Input sensitivity/impedance	1 V/2.2 kohms
Stand by function	Automatic ON-OFF
Power supply	1741: 220 volts
	1742: 240 volts
	1743: 120 volts
	1745: 240 volts (AUS)
Power consumption	Max. 130 watts
Stand by	3 watts
Total dimensions W x H x D	30 x 15 x 8 cm
Weight	6 kg

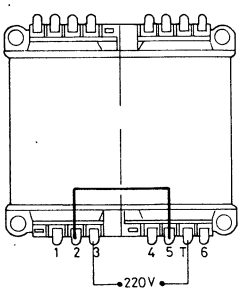
Subject to change without notice

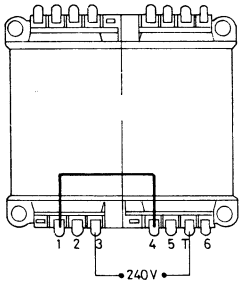
Ledningsmontering på nettransformator
Anvend dobbeltisoleret ledning til forbindelserne.

Wiring of Mains Transformer
Use double insulated wired for the connections.

220V
(type 1741)

F101: 6600072



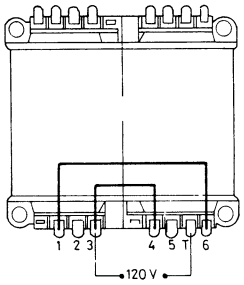


240V
(type 1742 GB)
(type 1745 AUS)

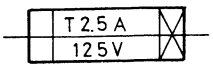
F101: 6600072

120V
(type 1743 US)

F101: 6600081

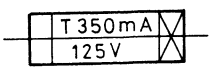


Explanation of the fuse symbols used in the set
Explanation de symboles du fusible utilisés dans l'appareil



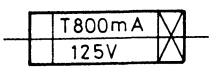
Replace with the same type of 2.5 amperes 125 volts slow acting fuse.

Remplacer par un fusible retardé de la même type et de 2.5 ampères 125 volts.



Replace with the same type of 315 milliamperes 125 volts slow acting fuse.

Remplacer par un fusible retardé de la même type et de 315 milli-ampères 125 volts.



Replace with the same type of 800 milliamperes 125 volts slow acting fuse.

Remplacer par un fusible retardé de la même type et de 800 milli-ampères 125 volts.

DIAGRAM MCL 2P, type 1741, 1742, 1743, 1745

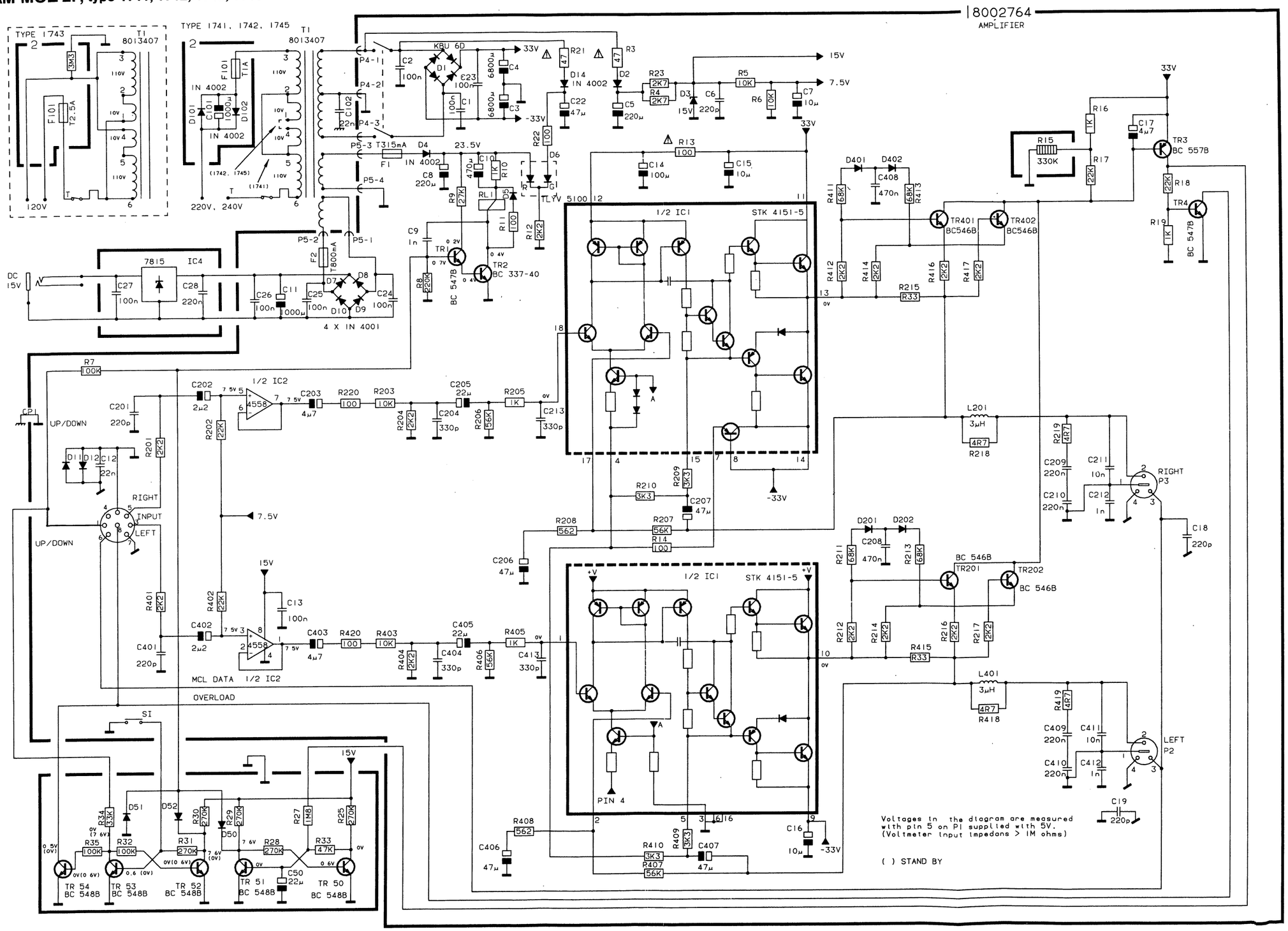
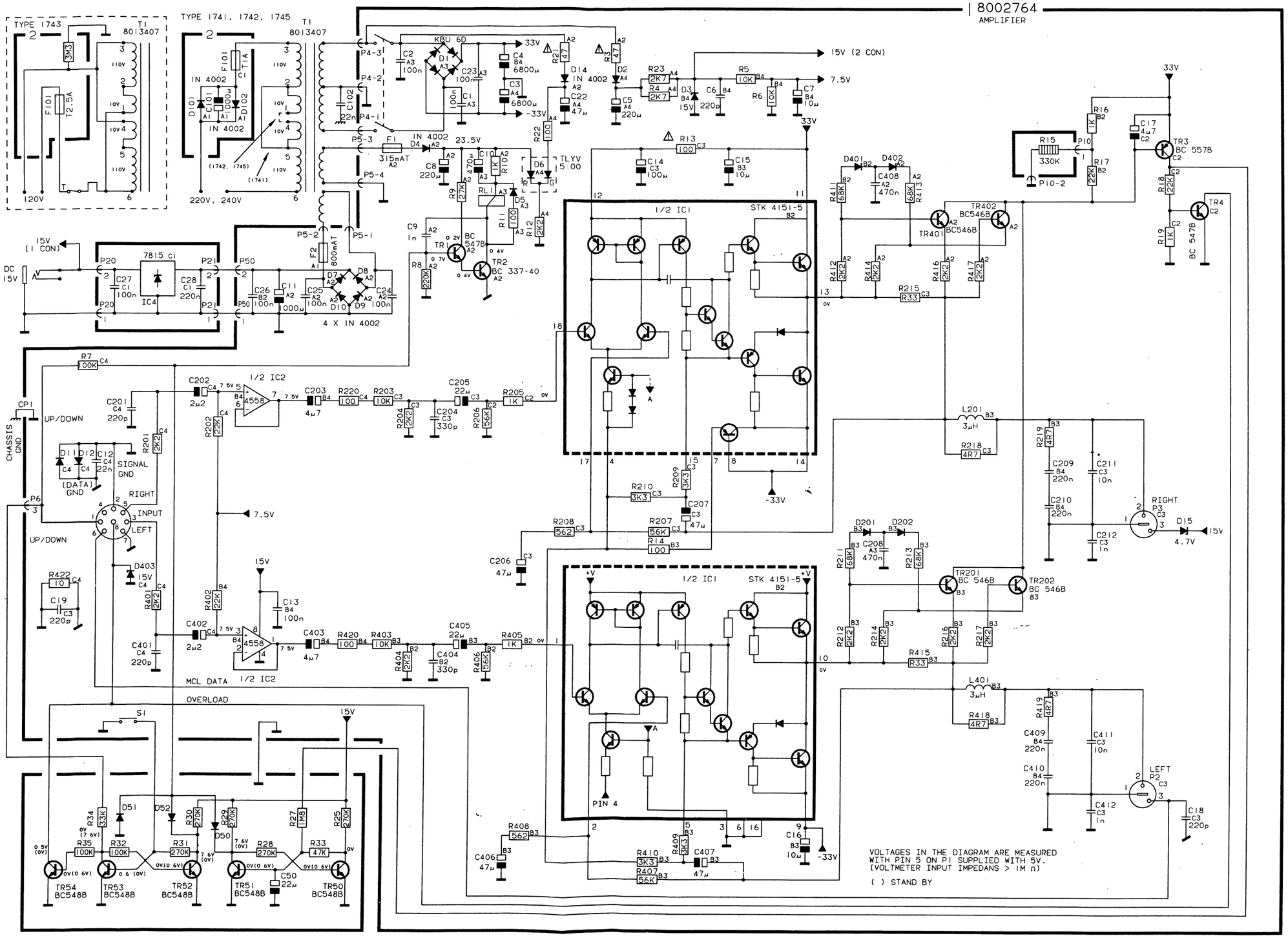
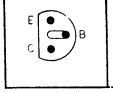
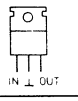


DIAGRAM MCL 2P, type 1741, 1742, 1743, 1745 from ser. no. 08588230



LIST OF ELECTRICAL PARTS

20	103	105	209	255			
							

Resistors not referred to are standard, see page 4-1

* Only from ser. no. 08588230

PCB 01,8002764
Amplifier

IC1	8350045		STK 4151-5	IC4	8340064	**105**	7815 15V
IC2	8340790	**103**	4548				
TR1	8320497	**20**	BC 547B	TR50-TR54	8320509	**20**	BC 548B
TR2	8320595	**20**	BC 337-40				
TR3	8320503	**20**	BC 557B	TR201-TR202	8320514	**20**	BC 546B
TR4	8320497	**20**	BC 547B				
D1	8300497		KBU6D	D14	8300023	**209**	1N4002
D2	8300023	**209**	1N 4002	*D15	8300800	**209**	1N5337
D3	8300053	**209**	BZX79C 15V	D50-D52	8300058	**209**	1N4148
D4	8300023	**209**	1N 4002				
D5	8300058	**209**	1N 4148	D101-D102	8300023	**209**	1N4002
D6	8330218	**255**	TLYV5100				
D7-D10	8300023	**209**	1N 4002	D201-D202	8300058	**209**	1N4148
D11-D12	8300058	**209**	1N 4148	*D403	8300053	**209**	BZX79C 15V
R3	5020345	47Ω 10% 0.3W		R21	5020345	47Ω 10% 0.3W	
R13	5020159	100Ω 10% 0.3W		R207	5010819	56kΩ 2% 1/4W	
R15	5220036	NTC 330kΩ 10% 1/2W		R208	5020814	562Ω 1% 1/4W	
				R215	5100175	0.33Ω 10% 2W	
C1-C2	4130230	100nF 20% 63V		C22	4201087	47µF -10+100% 40V	
C3-	4200629	6800µF -20+50% 40V		C23-C27	4130230	100nF 20% 63V	
C4				C28	4130308	220nF 10% 63V	
C5	4200311	220µF -20+50% 40V		C50	4200525	22µF 20% 10V	
C6	4010155	220pF 20% 50V		C101	4200711	1000µF -20+50% 10V	
C7	4200510	10µF 20% 16V		C201	4010155	220pF 10% 50V	
C8	4200311	220µF -20+50% 40V		C202	4200517	2.2µF 20% 50V	
C9	4010105	1nF 10% 50V		C203	4200515	4.7µF 20% 25V	
C10	4200704	470µF 20% 25V		C204	4010118	330pF 10% 50V	
C11	4200473	1000µF -10+50% 40V		C205	4200525	22µF 20% 10V	
*C12	4010060	22nF -20+80% 40V		C206-C207	4200617	47µF 20% 10V	
C13	4130230	100nF 20% 63V		C208	4130313	470nF 20% 63V	
C14	4200368	100µF -20+50% 63V		C209-C210	4130308	220nF 10% 63V	
C15-C16	4200342	10µF -20+50% 63V		C211	4130265	10nF 10% 63V	
C17	4200515	4.7µF 20% 25V		C212	4010105	1nF 10% 50V	
C18-C19	4010155	220pF 10% 50V		C213	4010118	33pF 10% 63V	
L201	6850165	Coil 3µH					
RL1	7600069	Relay					
T1	8013407	Transformer					
F1	6600096	315mAT		F2	6604008	800mAT	

	S1	7400268	Switch 1 pole			
	P2-P3	7210521	Plug 4 pole	P4	7220185	Plug 3 pole
				P5	7220426	Plug 4 pole
	*P2-*P3	7210520	Plug 3 pole			
	CP1	7530100	Solder flap			
PCB 02,8001112 Fuses, Type 1741, 1742, 1745	D101	8300023	**102** 1N 4002	D102	8300023	**105** 1N 4002
	C101	4200711	1000µF -20+50% 10V			
	F101	6600072	Fuse 1AT			
PCB 02,8001113 Fuses, Type 1743	R	5000194	3.3MΩ 10% 1/2W			
	F101	6600081	Fuse 2.5AT			
	T	6609033	Fuse Therm. 130 UL			

LIST OF MECHANICAL PARTS

	01Modul	8002764	Amplifier PCB			
	02Modul	8001112	Fuse PCB for type 1741,1742,1745			
		8001113	Fuse PCB for type 1743			
	9001	6150001	Pointer	9012	3452511	Rear plate
	9002	3152585	Holder	9013	3034078	Lock
	9003	2938262	Bushing	9014	6271102	Mains cord,type 1741,1742
	9004	3168719	Socket Panel		6270328	Mains cord, type 1743
	9005	2576225	Spacer		6270297	Mains cord, type 1745
	9006	2622248	Clamp	9015	2938154	Bushing
		*2622423	Clamp	9016	8013407	Transformer
	9007	2816195	Spring		6609024	Fuse Therm1 25 UL
	9008	3430434	Cabinet	9017	2938229	Bushing
	9009	2776109	Handle	9018	3430432	Cabinet
	9010	2812100	Spring	9019	3010007	Foot
	9011	3458617	Top plate		*3103274	Foot
				9020	3103066	Stop block

Survey of Screws and Nuts

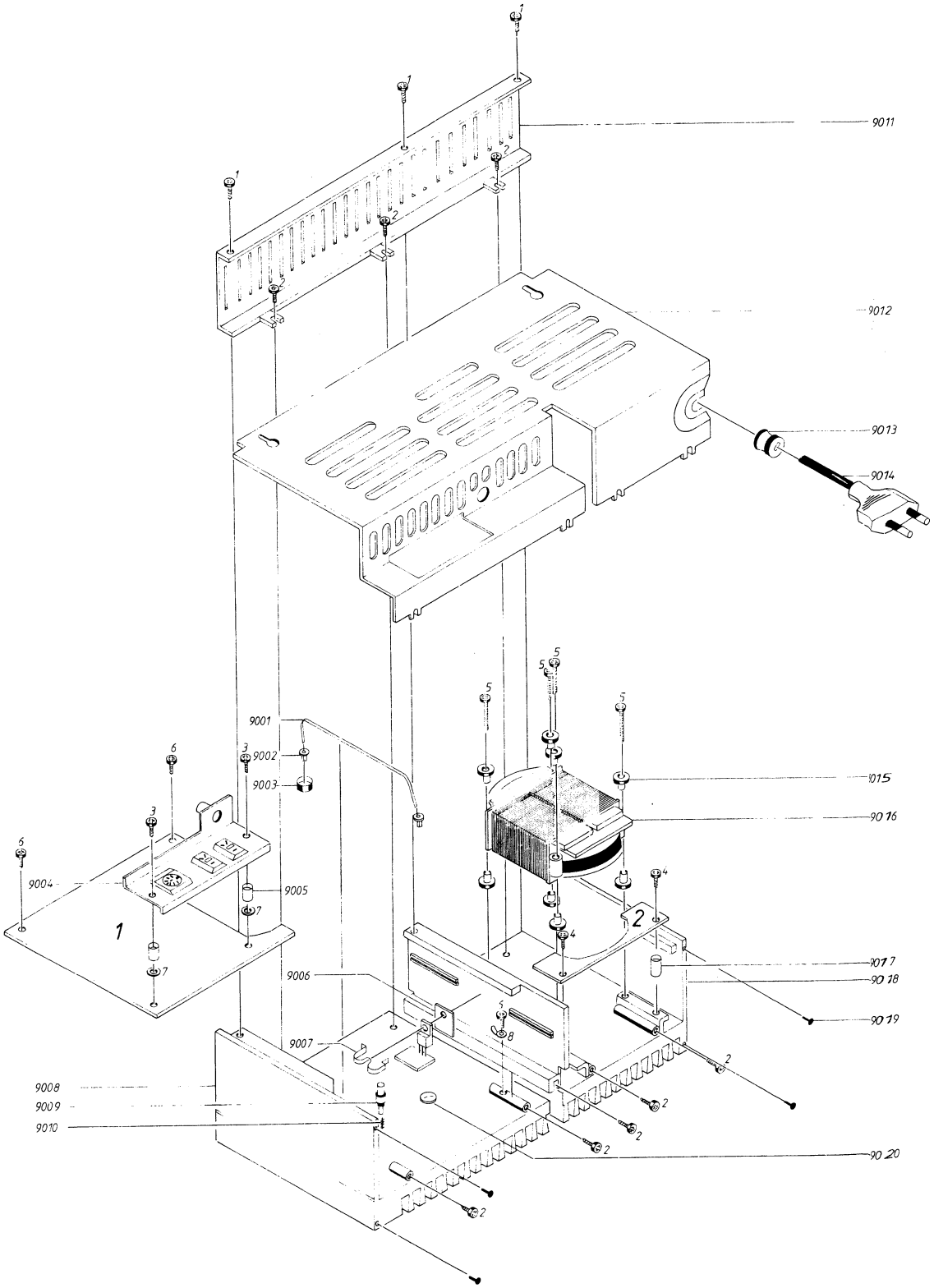
1	2039079	Screw,M3x8	5	2015072	Screw,M3.5x12
2	2039033	Screw,M3x6	6	2039907	Screw,M3x8
3	2039085	Screw,M3x24	7	2390106	Washer
4	2039065	Screw,M3x16	8	7530006	Solder flap

Parts not shown

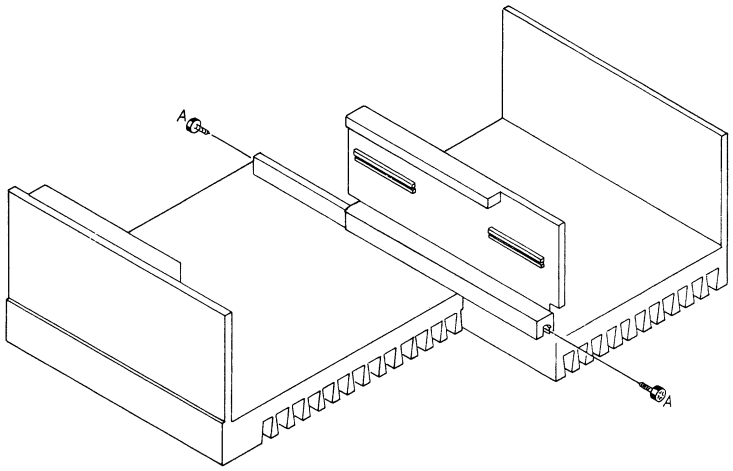
3392025	Outer carton
3397642	Foam packing
3390312	Bag with parts
6270420	DC cable 2.5m
6270417	Powerlink cable 2.5m

* Only from ser. no. 08588230

MCL 2P


9011
9012
9013
9014
9001
9002
9003
9004
9005
9006
9007
9008
9009
9010
1015
9016
9017
9018
9019
9020

ADSKILLELSE



De to skruer A fjernes.
De to emner kan nu skydes fra hinanden.

DISMANTLING

Remove the two screws A.
The two units can now be pushed apart.

ISOLATIONSTEST

Ethvert apparat skal isolationstestes, efter at det har været adskilt. Testen udføres, når apparatet er samlet igen og er klar til udlevering til kunden.

Der må ikke forekomme overslag under testen!

Isolationstesten udføres på følgende måde:

De to stikben på netstikket kortsluttes og tilsluttes den ene af terminalerne på isolationstesteren. Den anden terminal tilsluttes ben 2 på DIN stik.

OBS!
For at undgå beskadigelser af apparatet er det vigtigt, at begge terminaler på isolationstesteren har virkelig god kontakt.

Spændingsreguleringen på isolationstesteren drejes langsomt op, indtil en spænding på 1,5-2 kV er opnået. Her skal den holdes i ét sekund, hvorefter der langsomt drejes ned for spændingen igen.

INSULATION TEST

Each set must be insulation tested after having been dismantled. Make the test when the set has been reassembled and is ready to be returned to the customer.

Flashovers must not occur during the testing procedure!

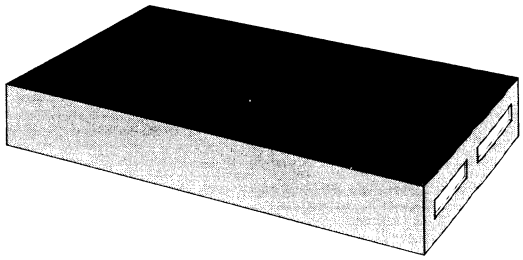
Make the insulation test as follows:

Short-circuit the two pins of the mains plug and connect them to one of the terminals of the insulation tester. Connect the other terminal to pin 2 of the DIN socket.

NOTE!
To avoid damaging the set it is essential that both terminals of the insulation tester have good contact.

Slowly turn the voltage control of the insulation tester until a voltage of 1.5-2 kV is obtained. Maintain that voltage for one second, then slowly turn it down again.

CONVERTER AV9000 AUDIOKIT, type 1610



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Explanation of diagrams 3-3
Diagrams 3-5, 3-6

List of electrical parts 3-8

List of mechanical parts 3-9

Repair tips
Repair tips, English 3-10
Repair tips, German 3-13
Repair tips, French 3-16

Dismantling 3-18

EXPLANATION OF DIAGRAM

Type numbers of transistors and ICs are indicated on the diagrams. If the position number is followed by an asterisk the spare part number must always be used because the component in question has been specially selected, e.g. TR102*.

Component print and coordinate system

The largest PCBs have component prints and a coordinate system on both the print and the component side.
On the diagrams every component has a coordinate number. This indicates in which coordinate on the PCB the component is situated. The coordinate numbers are written in smaller print types than the position numbers.

Control Circuit

In certain control circuits the active mode is indicated by a function term or by an abbreviation. This may be e.g. $\overline{\text{ST.BY.}}$ = low in the stand-by mode or ST.BY. = high in the stand-by mode.

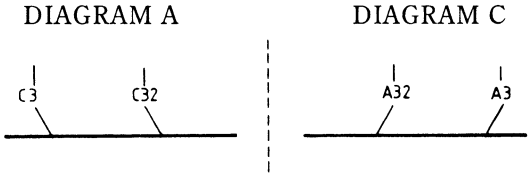
Wiring Connections

The wiring connections on the diagrams are assembled in 'bundles'. The individual wires are provided with one of the following codes:

INTERNAL CONNECTION ON ONE DIAGRAM PAGE

Internal connections on a diagram page are indicated by a number. The bend of the wire indicates in which direction the other end of the wire is found.

CONNECTION TO ANOTHER DIAGRAM PAGE



A connection to another diagram page is indicated by a number as well as by a letter of the diagram to which the connection leads.

Ground symbols

Three different ground symbols are used in the diagrams:

= Ground that is not galvanically separated from the mains. (Used in diagram I, PCB4).

= Ground

= Signal ground

Signal paths and IC markings

The signal paths are shown in the diagrams by means of semibold lines and arrow heads. As shown, three different types of arrow head are used:

 = Video, luminance and chrominance signals

 = Sound signal

 = Other signals

The arrow heads shown in the IC pins tell whether the pin indicated is an input or an output.

MEASURING CONDITIONS

Measure all DC voltages in relation to ground and with voltmeter or oscilloscope with inner resistance of at least 2 Mohm.

Diagram A Microcomputer

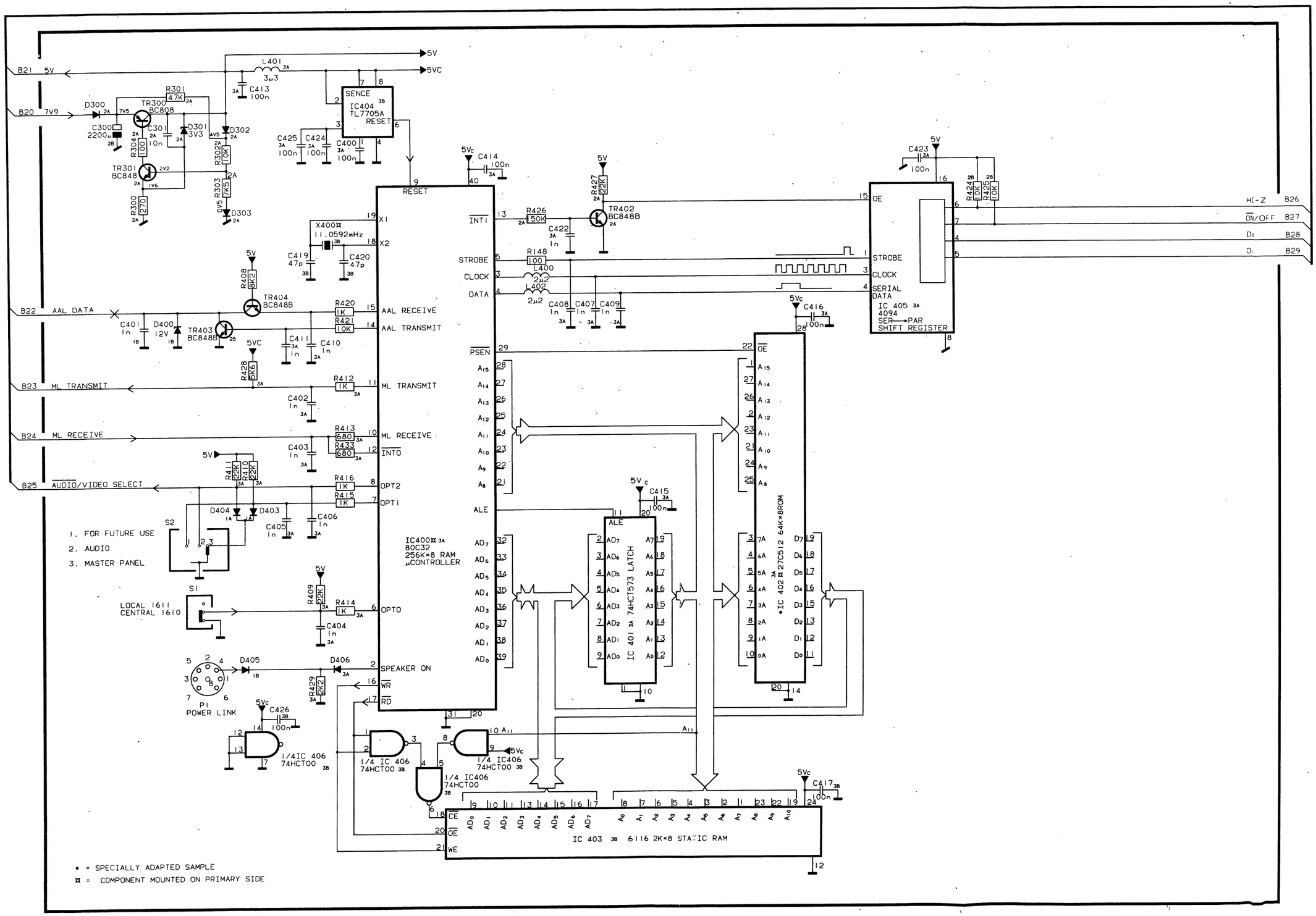
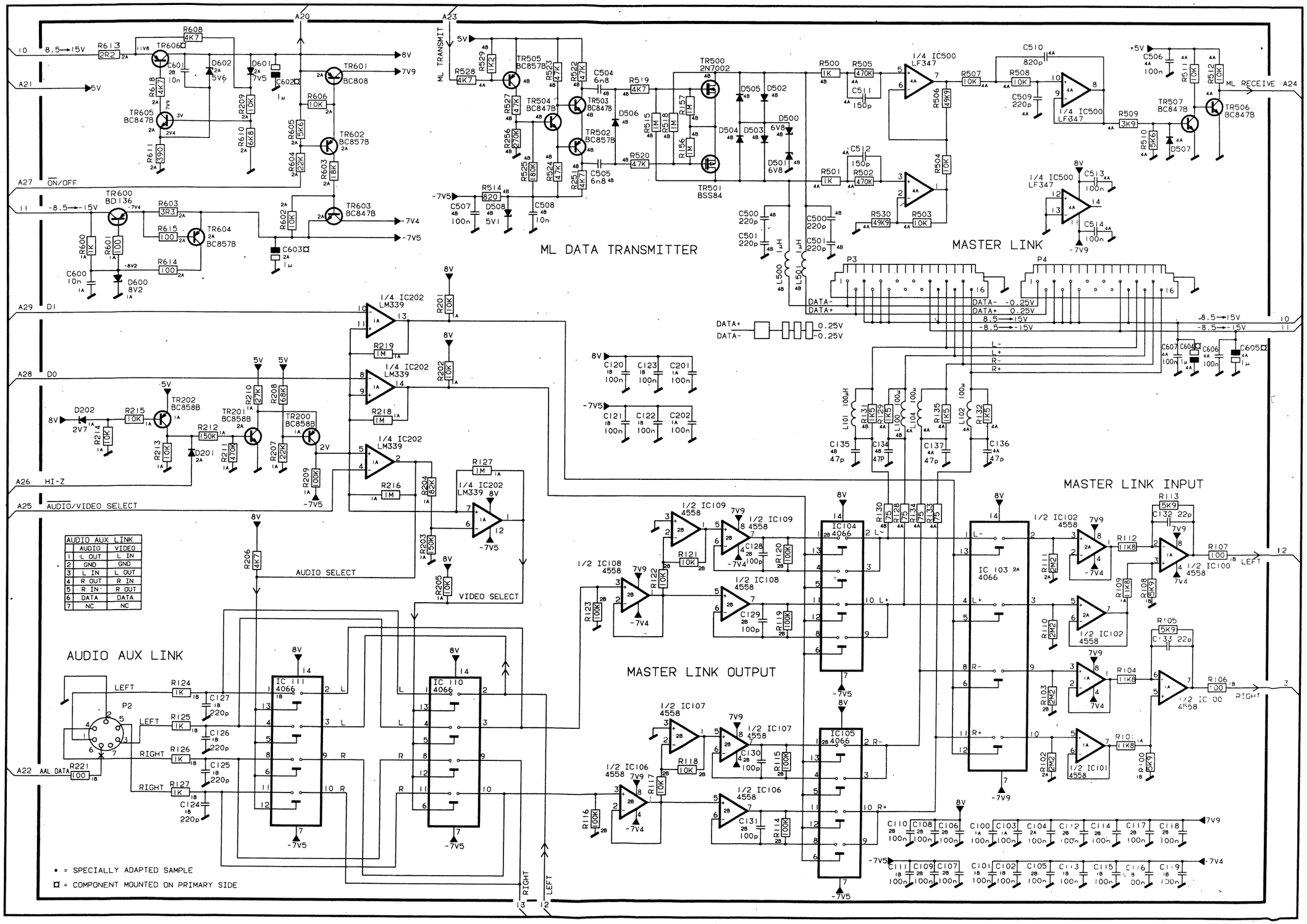
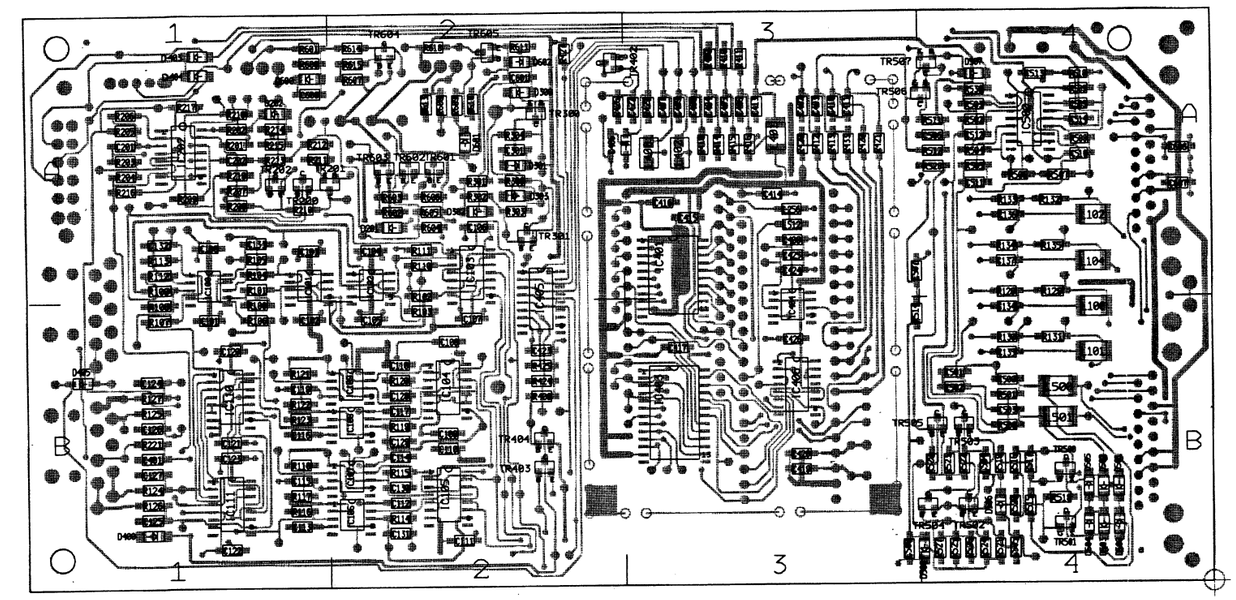


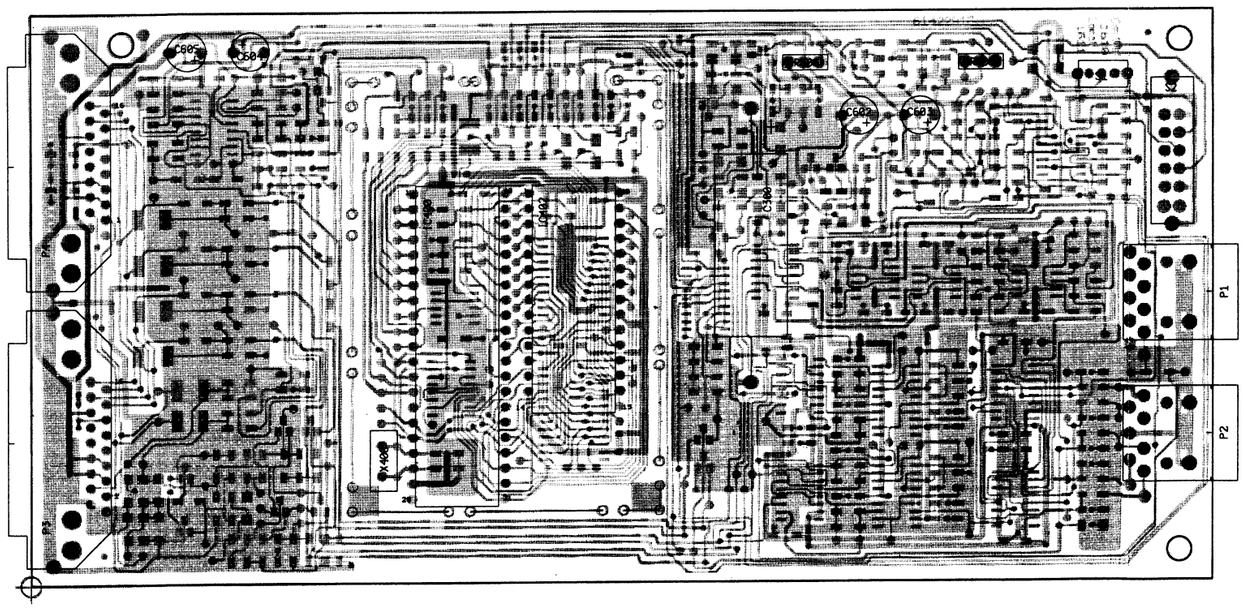
Diagram B A/V Sound Select, Master Link



AUDIO AUX LINK		
	AUDIO	VIDEO
1	L OUT	L IN
2	GND	GND
3	L IN	L OUT
4	R OUT	R IN
5	R IN	R OUT
6	DATA	DATA
7	NC	NC

PCB DRAWING

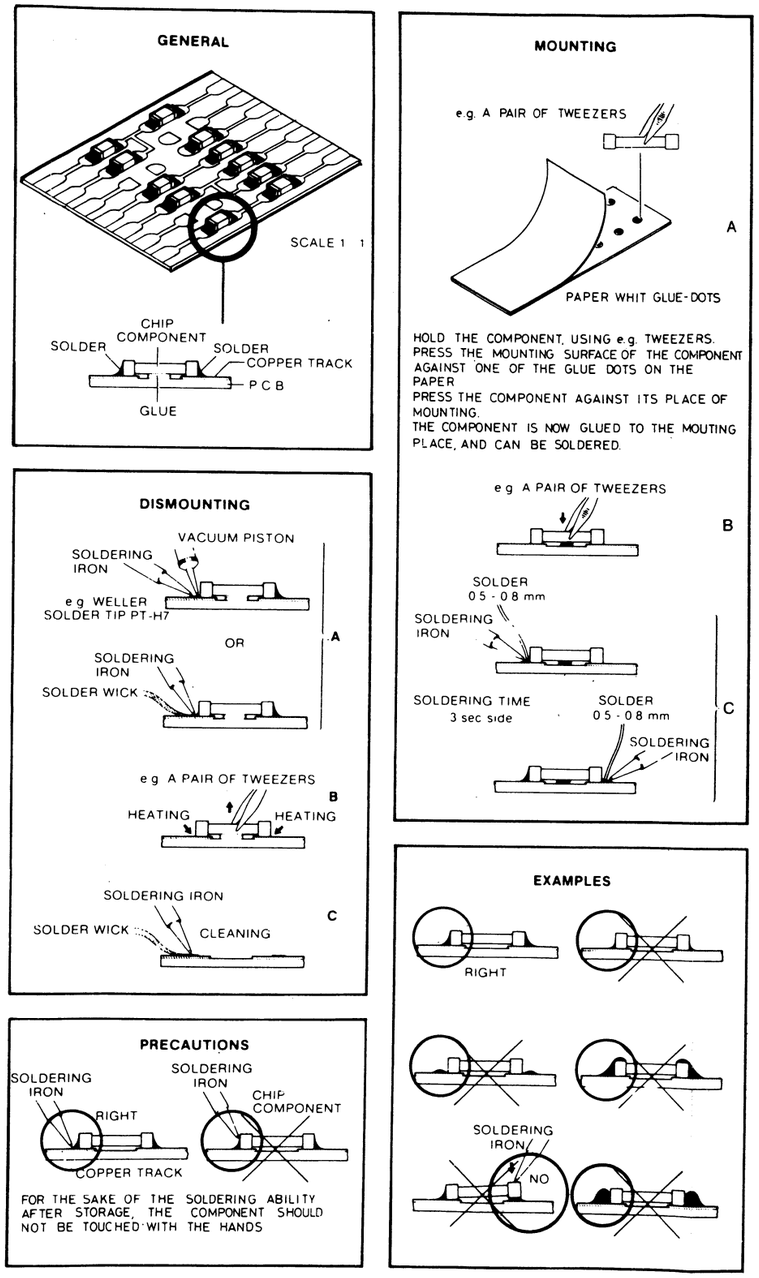




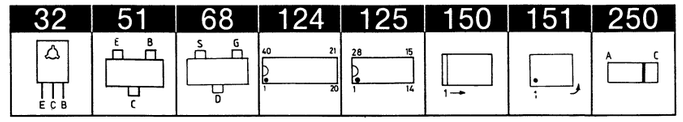
3-8
AV 9000

LIST OF ELECTRICAL PARTS

In the player chip components have been applied. For insertion and removal of chip components see the figure below.



PCB01, 8000048
ML/AAL-CONVERTER



Resistors not referred to are standard, see page 4-1

IC100- IC102	8341022	**150**	4558	IC400△	8341034	**124**	80C32
				IC401△	8341217	**151**	74HCT573
IC103- IC105△	8341024	**150**	4066	IC402*△	8341875	**125**	27C512
				IC403△	8341276	**151**	6116
IC106- IC109	8341022	**150**	4558	IC404	8341341	**150**	TL7705A
				IC405△	8341025	**150**	4094
IC110- IC111△	8341024	**150**	4066	IC406△	8341419	**150**	74HCT00
				IC500	8341231	**150**	MC34004
IC202	8341857	**150**	LM339				

TR200	8320616	**051**	BC858B	TR505	8320811	**051**	BC857B
TR201	8320615	**051**	BC848B	TR506- TR507	8320755	**051**	BC847B
TR202	8320616	**051**	BC858B				
TR300	8320609	**051**	BC808-25	TR600	8320240	**032**	BD136
TR301	8320615	**051**	BC848B	TR601	8320609	**051**	BC808-25
TR402- TR404	8320615	**051**	BC848B	TR602	8320811	**051**	BC857B
				TR603	8320755	**051**	BC847B
TR500	8320856	**068**	2n7002	TR604	8320811	**051**	BC857B
TR501	8320899	**068**	bss84	TR605	8320755	**051**	BC847B
TR502	8320811	**051**	BC857B	TR606	8320240	**032**	BD136
TR503- TR504	8320755	**051**	BC847B				

D201	8300482	**250**	LL4148/BO	D500- D501	8300520	**250**	DZ6V8 5%
D202	8300687	**250**	DZ2V7 5%				
D300	8300818	**250**	BAS85	D502- D507	8300482	**250**	LL4148/BO
D301	8300645	**250**	DZ3V3 2%				
D302- D303	8300482	**250**	LL4148/BO	D508	8300774	**250**	DZ5V1 5%
				D600	8300723	**250**	DZ8V2 5%
D400	8300639	**250**	DZ12V 2%	D601	8300482	**250**	LL4148/BO
D403- D404	8300482	**250**	LL4148/bO	D602	8300562	**250**	DZ5V6 5%

R100	5011531	5.9kΩ 1% 1/8W		R133- R134	5011571	75Ω 1% 1/8W	
R101	5011841	11.8kΩ 1% 1/8W					
R104	5011841	11.8kΩ 1% 1/8W		R302	5011557	10.0kΩ 1% 1/8W	
R105	5011531	5.9kΩ 1% 1/8W		R303	5012151	7.50kΩ 1% 1/8W	
R108	5011531	5.9kΩ 1% 1/8W		R503- R504	5011557	10.0kΩ 1% 1/8W	
R109	5011841	11.8kΩ 1% 1/8W					
R112	5011841	11.8kΩ 1% 1/8W		R506	5011599	49.9kΩ 1% 1/8W	
R113	5011531	5.9kΩ 1% 1/8W		R530	5011599	49.9kΩ 1% 1/8W	
R128	5011571	75Ω 1% 1/8W					
R130	5011571	75Ω 1% 1/8W					

C100- C123	4010166	100nF -20+80% 50V	C423- C426	4010166	100nF -20-80% 50V	
C124- C131	4000241	100pF 5% 50V	C500- C503	4000233	220pF 5% 50V	
C132- C133	4000277	22pF 5% 50V	C504- C505	4010174	6.8nF 10% 50V	
C134- C137	4000234	47pF 5% 50V	C506- C507	4010166	100nF -20-80% 50V	
C201- C202	4010166	100nF -20+80% 50V	C508	4010157	10nF 10% 50 V	
			C509	4000233	220pF 5% 50 V	
C300	4200818	2200µF 20% 16V	C510	4000327	820pF 5% 50 V	
C301	4010157	10nF 10% 50V	C511- C512	4000229	150pF 5% 50 V	
C400	4010166	100nF -20+80% 50V				
C401- C411	4010132	1nF 10% 50V	C513- C514	4010166	100nF -20-80% 50V	
C413- C417	4010166	100nF -20+80% 50V	C600- C601	4010157	10nF 10% 50V	
C418	4010132	1nF 10% 50V	C602- C605	4200426	1µF 20% 50V	
C419- C420	4000234	47pF 5% 50V	C606- C607	4010166	100nF -20-80% 50V	
C422	4010132	1nF 10% 50V				

△ Static electricity may destroy the component
* Specially adapted sample

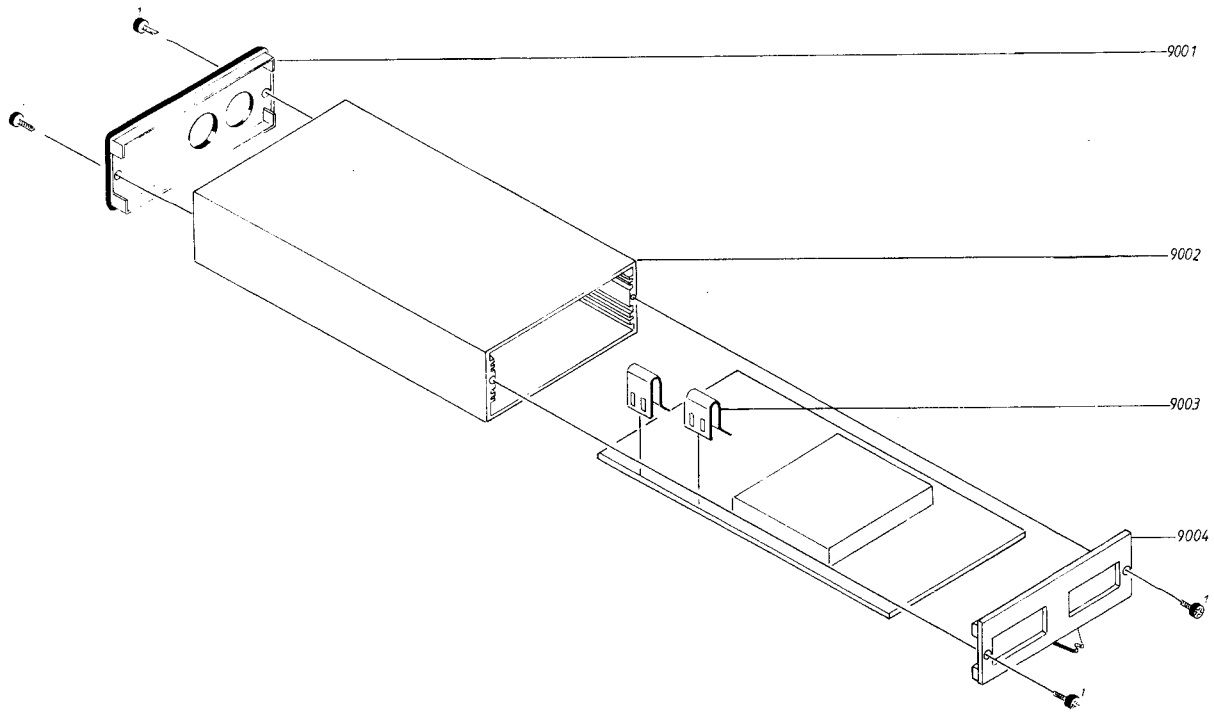
L100-L102	8020705	100µH 10%	L401	8020609	3.3µH 20%
L104	8020705	100µH 10%	L402	8020821	2.2µH 5%
L400	8020821	2.2µH 5%	L500-L501	8020755	1.0µH 20%

P1	7210695	Socket 8 pole	P3-P4	7210904	Socket 16 pole
P2	7210924	Socket 7 pole			

S1	7400409	Switch 1 pole	S2	7400379	Switch 2 pole

X400	8090104	11.0592MHz

LIST OF MECHANICAL PARTS



9001	3164911	Cover
9002	3430588	Profil
9003	3358259	Heatsink
9004	3164913	Cover

Modul01	8000048	ML/AAL-Converter
	3304144	Shield
	3164805	Shield top/bottom
	7200056	Socket IC
	7500126	Crimp Contact

Survey of screws

1	2011055	Screw 3 x 10

Parts not shown

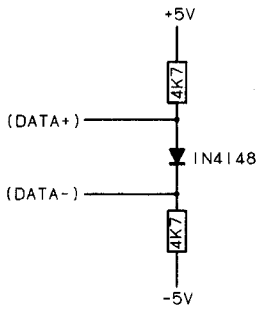
	3500269	Setting up Guide, DK		3500274	Setting up Guide, NL
	3500270	Setting up Guide, S		3500275	Setting up Guide, F
	3500271	Setting up Guide, SF		3500276	Setting up Guide, I
	3500272	Setting up Guide, GB		3500277	Setting up Guide, E
	3500273	Setting up Guide, D			

REPAIR TIPS

The switches must be set correctly:
- S1 in position Central 1610.
  Position Local 1611 is for future use.
- S2 in position 2 or 3.
  1: For future use.
  2: Audio.
  The converter box is in a central room with an audio master *with* speakers.
  Connect the audio master to the converter box with an Audio AUX Link cable.
  Set the audio master to option 1 or 2.
  3: Master Panel.
  The converter box is in a central room with an audio master *without* speakers.
  Connect the audio master to the converter box with an Audio AUX Link cable and a Powerlink cable.
  Set the audio master to option 0.

Testing the data and audio signal paths

Apply the following voltages/signals to one of the Master Link sockets (P3 or P4):
- Apply a voltage of between 8.5V → 15V to pin 4, 5, 6 or 12.
- Apply a voltage of between -8.5V → -15V to pin 11.
- Connect the metal jacket of the Master Link socket to ground (0V).
- The voltages at pin 2 (Data+) and pin 1 (Data-) are generated most easily by means of the following external components:

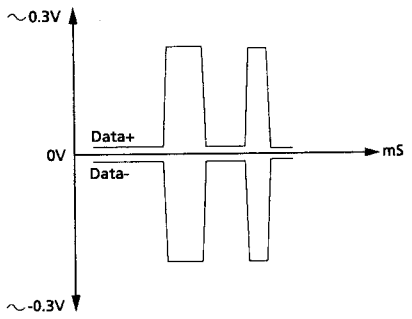


Testing the data paths AAL → ML, ML → AAL:

- Connect the AUX input/output of a Beomaster (e.g. a BM 4500) to the AAL socket of the converter box.
- Set the converter box switch to position 2.
- Press [LINK] [SHIFT] [LINK] (Beolink 1000mkII) or [LINK] [LIGHT] (Beolink 1000mkIII, 5000, 7000).
  These commands are transmitted via IR to the Beomaster which transmits the data signal via the data link in the AAL cable to the converter box where the data signal is converted into a different data format.

It is now possible to measure balanced data signals at Data+ and Data- (see figure), and the following circuits can be tested:
AAL → ML:
AAL data receiver, microprocessor, ML data transmitter.
ML → AAL:
ML data receiver is tested by measuring at IC400 pin 10 (ML RECEIVE). The signal must be the same as the one measured at pin 11 (ML TRANSMIT), only it is delayed by 10-15µS.
The microprocessor and AAL transmit can be tested by transmitting ML codes to the converter box from e.g. a Beovision AV9000.

The ML data transmit/receive circuit has been designed in such a way that individual components can be defective without impeding the general function. For example, the diodes D500 - D505 protect against static electricity.
Consequently, when performing a repair it may be necessary to replace/check the following components:
- If either of the transistors TR500 or TR501 is defective, replace both of them, and check the diodes D500 - D505.



Testing the audio signal path:

- Short-circuit C422, coordinate 3A (SMD), thereby three-stating the outputs of IC405.
- Connect pin 6 and pin 7 of IC405, coordinate 3A (SMD), to ground.

AAL → ML:
- Connect pin 4 of IC405 to ground.
- Connect pin 5 of IC405 to 5V.
- Connect an audio signal to the Audio AUX Link socket as follows:
  - Pin 3 = left in.
  - Pin 5 = right in.
  - Pin 2 = ground.

When the audio signal has been connected, it should be possible to measure balanced audio signals with the same amplitude at the Master Link socket:
- Pin 13 = left-, and 14 = left+.
- Pin 15 = right-, and 16 = right+.
- Metal jacket = ground.

ML → AAL:
- Connect pin 4 of IC405 to 5V.
- Connect pin 5 of IC405 to ground.
- Apply balanced audio signals to the Master Link socket as follows:
  - Pin 13 = left-, and 14 = left+.
  - Pin 15 = right-, and 16 = right+.
  - Metal jacket = ground.

When the balanced audio signal has been connected, it should be possible to measure audio signals with the same amplitude at the Audio AUX Link socket:
- Pin 1 = left out.
- Pin 4 = right out.
- Pin 2 = ground.

If no audio signals come through, check whether or not the voltage at pins 5, 7, 9 and 11 of IC202, coordinate 1A, is approx. 2V. If the voltage is approx. -7.5V, it is not possible to establish an audio signal connection. In that case, check whether or not TR202, coordinate 1A (SMD), is off.

DISMANTLING

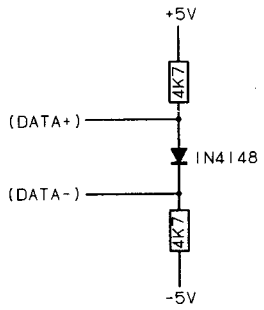
Remove the end plate of the box, with the two Master Link sockets, and pull out the PCB.

REPARATUR-TIPS

Die Schalter müssen korrekt stehen:
- S1 in Stellung „Central 1610".
  Die Stellung „Local 1611" ist für den zukünftigen Gebrauch vorgesehen.
- S2 in Stellung 2 oder 3.
  1: Für den zukünftigen Gebrauch.
  2: Audio.
  Die Konverterbox befindet sich in einem Hauptzimmer mit einem Audiomaster *mit* Lautsprechern.
  Der Audiomaster ist mit der Konverterbox mit einem „Audio AUX Link"-Kabel zu verbinden.
  Der Audiomaster ist in Option 1 oder 2 zu bringen.
  3: Master Panel.
  Die Konverterbox befindet sich in einem Hauptzimmer mit einem Audiomaster *ohne* Lautsprecher.
  Der Audiomaster ist mit der Konverterbox mit einem „Audio AUX Link"-Kabel und einem „Power Link"-Kabel zu verbinden.
  Der Audiomaster ist in Option 0 zu bringen.

Test von Datenweg und Audio-Signalweg

Eine der „Master Link"-Steckbuchsen (P3 oder P4) ist mit den folgenden Spannungen/Signalen zu versorgen:
- Anschluß 4, 5, 6 oder 12 mit einer Spannung von zwischen 8,5 V → 15 V versorgen.
- Anschluß 11 mit einer Spannung von zwischen -8,5 V → 15 V versorgen.
- Metallummantelung der „Master Link"-Steckbuchse an Masse (0 V) legen.
- Die Spannungen am Anschluß 2 (Data+) und Anschluß 1 (Data-) werden am einfachsten mit Hilfe der folgenden externen Komponenten gewonnen:



Test des Datenwegs AAL → ML, ML → AAL:

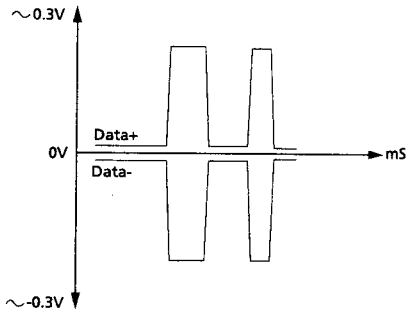
- Den AUX-Ein/Ausgang eines Beomasters (z.B. BM 4500) mit der AAL-Steckbuchse der Konverterbox verbinden.
- Schalter der Konverterbox in Stellung 2 bringen.
- Tasteneingabe [LINK] [SHIFT] [LINK] (Beolink 1000 MK II) oder [LINK] [LIGHT] (Beolink 1000 MK III, 5000, 7000).
  Diese Befehle werden mittels IR an den Beomaster gesendet, der das Datensignal über die Datenleitung (Data Link) im AAL-Kabel an die Konverterbox weitergibt, in der das Datensignal in ein anderes Datenformat umgewandelt wird.

Es ist jetzt möglich, balancierte Datensignale auf „Data+" und „Data-" (siehe Abb.) zu messen; es können nunmehr die folgenden Schaltkreise getestet werden:

AAL -> ML:
AAL-Datenempfänger, Mikroprozessor, ML-Datensender.
ML -> AAL:
Das Testen des ML-Datenempfängers erfolgt durch Messen am Anschluß 10 des IC400 (ML RECEIVE); das Signal muß dasselbe sein wie das am Anschluß 11 (ML TRANSMIT) gemessene, nur um 10-15 µs zeitverzögert.
Das Testen des Mikroprozessors und des AAL-Datensenders kann dadurch erfolgen, daß ML-Codes an die Konverterbox gesendet werden, z.B. von Beovision 9000.

Der ML-Datensender/Empfängerkreis (Data Transmit/Receive) ist so ausgelegt, daß einzelne Komponenten fehlerhaft sein können, ohne daß die Funktion dadurch beeinträchtigt wird. So z.B. dienen die Dioden D500 - D505 als Schutzdioden gegen statische Elektrizität.
Bei einer Reparatur kann es deshalb notwendig sein, die folgenden Komponenten auszuwechseln/zu überprüfen:

- Ist einer der Transistoren TR500 oder TR501 fehlerhaft, so sind beide Transistoren auszutauschen; die Dioden D500 - D505 sind zu überprüfen.



Test des Audio-Signalwegs:

- C422, Koordinate 3A, (SMD) kurzschließen, wodurch die Ausgänge des IC405 in den Tri-State-Zustand geschaltet werden.
- Anschluß 6 und Anschluß 7 des IC405, Koordinate 3A, (SMD) an Masse legen (0 V).

AAL → ML:
- Anschluß 4 des IC405 an Masse legen (0 V).
- Anschluß 5 des IC405 mit 5 V verbinden.
- Ein Audiosignal folgendermaßen an die „Audio AUX Link"-Steckbuchse anschließen:
- Anschluß 3 = links EIN.
- Anschluß 5 = rechts EIN.
- Anschluß 2 = Masse (0 V).

Wenn das Audiosignal angeschlossen ist, müssen an der „Maser Link"-Steckbuchse balancierte Audiosignale mit der gleichen Amplitude meßbar sein:
- Anschluß 13 = links - und Anschluß 14 = links +.
- Anschluß 15 = rechts - und Anschluß 16 = rechts +.
- Metallummantelung = Masse (0 V).

ML → AAL:
- Anschluß 4 des IC405 mit 5 V verbinden.
- Anschluß 5 des IC405 an Masse legen (0 V).
- Balancierte Audiosignale folgendermaßen an die „Master Link"-Steckbuchse anschließen:
  - Anschluß 13 = links – und Anschluß 14 = links +.
  - Anschluß 15 = rechts – und Anschluß 16 = rechts +.
  - Metallummantelung = Masse (0 V).

Wenn das balancierte Audiosignal angeschlossen ist, müssen an der „Audio AUX Link"-Steckbuchse Audiosignale mit der gleichen Amplitude meßbar sein:
- Anschluß 1 = links AUS.
- Anschluß 4 = rechts AUS.
- Anschluß 2 = Masse (0 V).

Kommen keine Audiosignale hindurch, ist zu kontrollieren, ob die Spannung an den Anschlüssen 5, 7, 9 und 11 des IC202, Koordinate 1 A, bei ca. 2 V liegt. Liegt die Spannung bei ca. -7,5 V, so ist es nicht möglich, eine Audiosignal-Verbindung herzustellen. Es ist dann zu kontrollieren, ob TR202, Koordinate 1A, (SMD) sperrt.

ZERLEGUNG

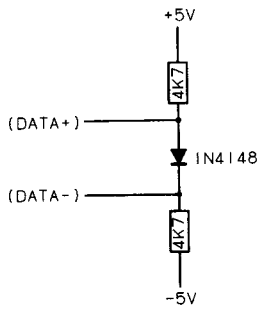
Stirnplatte der Box mit den beiden "Master Link"-Steckbuchsen entfernen; die Platine läßt sich jetzt herausziehen.

CONSEILS DE REPARATION

La position correcte des sélecteurs est la suivante :
- S1 en position «Central 1610».
  La position «Local 1611» est destinée à une application future.
- S2 en position 2 ou 3.
  1: Application future.
  2: Audio.
  Le boîtier de conversion est installé dans une pièce principale où se trouve un audiomaster *présentant* des haut-parleurs.
  Relier l'audiomaster au boîtier de conversion en utilisant un câble Audio AUX Link.
  Amener l'audiomaster sur l'option 1 ou 2.
  3: Master Panel.
  Le boîtier de conversion est installé dans une pièce principale où se trouve un audiomaster *dépourvu* de haut-parleurs.
  Relier l'audiomaster au boîtier de conversion en utilisant un câble Audio AUX Link et un cordon Powerlink.
  Amener l'audiomaster sur l'option 0.

Contrôle des données et de la voie du signal audio

Appliquer les tensions et signaux suivants à l'une des fiches Master Link (P3 ou P4) :
- Appliquer à la borne 4, 5, 6 ou 12 une tension comprise entre 8,5 et 15 V.
- Appliquer à la borne 11 une tension comprise entre -8,5 et -15 V.
- Raccorder l'enveloppe métallique de la fiche Master Link à la masse (0 V).
- Les composants externes suivants permettent de générer plus facilement les tensions à appliquer aux bornes 2 (Data+) et 1 (Data-) :



Contrôle de la voie de données AAL → ML, ML → AAL

- Raccorder l'entrée/sortie AUX d'un Beomaster (BM 4500 p. ex.) à la fiche AAL du boîtier de conversion.
- Amener le sélecteur du boîtier de conversion en position 2.
- Appuyer sur la séquence [LINK] [SHIFT] [LINK] Beolink 1000mkII ou [LINK] [LIGHT] Beolink 1000mkIII, 5000, 7000.
  Ces ordres sont envoyés par IR au Beomaster qui utilise la liaison de transmission du câble AAL pour transférer le signal de données au boîtier de conversion. Le signal est converti dans un autre format dans ce boîtier.

Il est alors possible de mesurer des signaux de données équilibrés au niveau des lignes «Data+» et «Data-» (voir fig.) et de contrôler le circuit suivant :

AAL → ML :

récepteur de données AAL, microprocesseur, émetteur de données ML

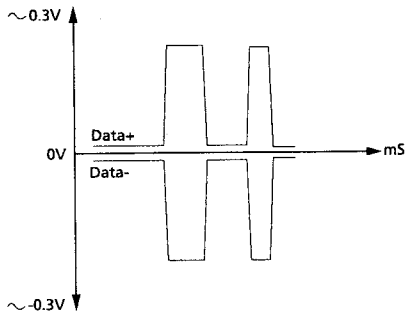
ML → AAL :

Le récepteur de données ML se contrôle en procédant à une mesure à la borne 10 de IC400 (ML RECEIVE). Le signal doit être identique à celui relevé à la borne 11 (ML TRANSMIT) sauf qu'il est temporisé de 10 à 15 µs.

Le test du microprocesseur et de la fonction AAL-transmit peut se faire en demandant au Beovision 9000 p. ex. d'appliquer des codes ML au boîtier de conversion.

Le circuit «ML-datatransmit/receive» est conçu pour fonctionner même si certains composants sont défectueux. Dans ce contexte, les diodes D500 à D505 protègent contre l'électricité statique.
Lors des interventions, il peut donc s'avérer nécessaire de remplacer ou de vérifier le bon fonctionnement de certains composants :

- Remplacer TR500 et TR 501 si l'un de ces transistors est défecteux. Contrôler les diodes D500 à D505.



Contrôle de la voie du signal audio

- Court-circuiter le CMS C422 (coordonnées 3A) pour que les sorties de IC405 puissent adopter trois états.
- Relier les bornes 6 et 7 de IC405 (CMS), coordonnées 3A, à la masse (0 V).

AAL → ML :

- Relier la borne 4 de IC405 à la masse (0 V).
- Relier la borne 5 de IC405 à l'alimentation 5 V.
- Appliquer un signal audio à la fiche Audio AUX Link en respectant les données suivantes :
  - Borne 3 = entrée gauche
  - Borne 5 = entrée droite
  - Borne 2 = masse (0 V)

La fiche Master Link doit présenter des signaux audio équilibrés de même amplitude quand le signal audio est appliqué :

- Borne 13 = gauche –, et 14 = gauche +
- Borne 15 = droite –, et 16 = droite +
- Enveloppe métallique = masse (0 V)

ML → AAL :
- Relier la borne 4 de IC405 à l'alimentation 5 V.
- Relier la borne 5 de IC405 à la masse (0 V).
- Appliquer des signaux audio équilibrés à la fiche Master Link en respectant les données suivantes :
- Borne 13 = gauche –, et 14 = gauche +
- Borne 15 = droite –, et 16 = droite +
- Enveloppe métallique = masse (0 V)

La fiche Audio AUX Link doit présenter des signaux audio équilibrés de même amplitude quand le signal audio équilibré est appliqué :
- Borne 1 = sortie gauche
- Borne 4 = sortie droite
- Borne 2 = masse (0 V)

En l'absence de signaux audio, vérifier que la tension aux bornes 5, 7, 9 et 11 de IC202 (coordonnées 1A) avoisine 2 V. Il est impossible d'établir la liaison du signal audio si la tension est de -7,5 V env. Contrôler que le CMS TR202 (coordonnées 1A) est à l'état bloqué.

DESASSEMBLAGE

Enlever la plaque d'extrémité présentant les deux fiches Master Link. Il est alors possible de sortir la carte imprimée en la tirant.

Standard resistors

Resistors 5% 1/2 W

	x1	x10	x100	x1k	x10k	x100k	x1M	x10M
1.0		5011000	5011013	5011028	5011044	5010313	5011069	5011083
1.2	5011406	5011001	5011014	5011030	5011045	5011058	5010421	
1.5	5010727	5011002	5011015	5011031	5011046	5011059	5011071	
1.8	5010857	5010787	5011016	5011033			5011072	
2.2	5011335	5010708	5010815	5011034	5011048	5011061	5011074	
2.7	5011612	5010803	5011018	5010055	5011049	5011062	5011075	
3.3	5012147	5011007	5011019	5011037		5011063	5010381	
3.9		5010782	5011021	5010700	5011051		5010392	
4.7	5010765	5011009	5011022	5010035		5011065	5011078	
5.6		5011010	5011023	5011041		5011066		
6.8	5010874	5011011	5011024	5011042	5010810	5011067	5011080	
8.2		5011012	5011026	5011043	5010038	5011068	5011081	

Resistors 5% 1/4 W

	x1	x10	x100	x1k	x10k	x100k	x1M	x10M
1.0	5010592	5010506	5010065	5010040	5010059	5010049	5010054	5010638
1.2		5010595	5010128	5010153	5010046	5010047	5010665	
1.5	5011348	5010468	5010057	5010247	5010053	5010063	5010093	
1.8		5010822	5010362	5010066	5010135	5010072	5010791	
2.2	5010682	5010448	5010092	5010064	5010079	5010120	5010245	
2.7	5010925	5010403	5010000	5010298	5010141	5010083	5010431	
3.3	5011860	5010253	5010044	5010076	5010075	5010117	5010848	
3.9	5011377	5010622	5010070	5010069	5010060	5010073	5010714	
4.7	5010888	5010411	5010058	5010048	5010045	5010077	5011513	
5.6	5010706	5010151	5010067	5010041	5010061	5010071	5010658	
6.8	5010874	5010039	5010144	5010052	5010062	5010074		
8.2	5010880	5010056	5010068	5010154	5010091	5010505		

Resistors 5% 1/8 W

	x1	x10	x100	x1k	x10k	x100k	x1M	x10M
1.0		5011464	5011357	5010816	5010935	5011440	5011459	5020875
1.2		5011351	5011084	5011442	5011338	5011341	5011175	
1.5		5011463	5011443	5011178	5011364	5011398	5011460	
1.8			5011350	5011361	5011344	5011468		
2.2	5011032	5011376	5010886	5011353	5010833	5011369	5011342	
2.7		5011471	5011355	5011362	5011366	5011370	5011478	
3.3		5011519	5011337	5010827	5011346	5011371	5011462	
3.9		5011438	5011883	5011157	5011457	5011372	5020876	
4.7		5011038	5011441	5011363	5010937	5011343	5011611	
5.6		5011412	5011358	5010885	5011166	5011340		
6.8		5011356	5011336	5010839	5011367	5011458		
8.2		5011466	5011354	5011339	5011368	5011373		

Resistors SMD 2% 1/8 W
SMD 5% 1/8 W

Glue dots, approx. 200, part no. 3181932

	5%	2%	2%	2%	2%	2%	5%	2%
	x1	x10	x100	x1k	x10k	x100k	x1M	x10M
1.0	5011623	5011647	5011218	5011227	5011241	5011256	5011267	5011730
1.1	5011624	5011648	5011669	5011681	5011689	5011694	5011707	
1.2	5011625	5011649	5011219	5011682	5011490	5011257	5011708	
1.3	5011626	5011650	5011670	5011683	5011242	5011258	5011709	
1.5	5011627	5011651	5011220	5011228	5011243	5011259	5011710	
1.6	5011628	5011652	5011671	5011684	5011690	5011695	5011711	
1.8	5011629	5011653	5011672	5011229	5011244	5011260	5011712	
2.0	5011630	5011654	5011673	5011685	5011691	5011696	5011713	
2.2	5011216	5011655	5011674	5011230	5011245	5011261	5011714	
2.4	5011634	5011656	5011675	5011686	5011246	5011697	5011715	
2.7	5011635	5011657	5011497	5011231	5011247	5011262	5011716	
3.0	5011731	5011658	5011499	5011500	5011692	5011698	5011717	
3.3	5011217	5011659	5011676	5011232	5011248	5011263	5011718	
3.6	5011636	5011660	5011677	5011687	5011249	5011264	5011719	
3.9	5011637	5011661	5011221	5011233	5011491	5011699	5011720	
4.3	5011638	5011662	5011498	5011688	5011492	5011700	5011721	
4.7	5011639	5011269	5011222	5011234	5011250	5011265	5011722	
5.1	5011640	5011663	5011678	5011235	5011493	5011701	5011723	
5.6	5011641	5011664	5011223	5011236	5011251	5011702	5011724	
6.2	5011642	5011665	5011224	5011237	5011693	5011703	5011725	
6.8	5011643	5011666	5011225	5011238	5011252	5011704	5011726	
7.5	5011644	5011667	5011679	5011239	5011253	5011705	5011727	
8.2	5011645	5011270	5011226	5011240	5011254	5011266	5011728	
9.1	5011646	5011668	5011680	5011489	5011255	5011706	5011729	